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A.M.A. Session . NEW YORK . June 10-14, 1940

METABOLISM

The *November Number of the Medical Clinics of North America* is one of the most valuable we have ever published. It comes from the leading hospitals of Philadelphia and contains an *8-Clinic Symposium* on the all-important subject of *Metabolism.*

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AFTER-EFFECTS OF HEAD INJURY

THE POST-TRAUMATIC CONCUSSION STATE (CONCUSSION, TRAUMATIC ENCEPHALOPATHY) AND THE POST-TRAUMATIC PSYCHONEUROTIC STATE (PSYCHONEUROSIS, HYSTERIA): A STUDY IN DIFFERENTIAL DIAGNOSIS

WALTER F. SCHALLER, M.D.

SAN FRANCISCO

Head injuries from warfare and from industrial and automobile accidents have in recent years occasioned a constantly increasing number of claims for awards, based on veterans' and industrial compensation laws and on public liability. The economic importance of a proper understanding of the physical and mental results of such injuries, from the standpoint of both occupational disability and future outlook for recovery, therefore is of great importance. Head injuries may be classified as organic or functional, dependent on the presence or absence of structural changes in nervous tissue. In the first category, that of organic injuries, are placed brain pressure by depressed skull fracture, epidural or subdural hemorrhage, lacerations, contusions, softenings and complicating infections such as meningitis or abscess. The symptoms and signs of these more evident injuries have been carefully studied and classified as to demonstrated pathologic features, the treatment has been standardized and the prognosis has been fairly well evaluated, so they will not be dealt with in this paper. In the second category, that of functional disorders, are placed the post-traumatic psychoneuroses or traumatic hysterias, purely psychogenic states which develop out of mental complexes following the acute symptoms. Traumatic psychosis will not be considered here. Midway between these two contrasting pictures is the post-traumatic concussion state, an after-effect of injury variously designated as traumatic encephalopathy, traumatic encephalitis, cerebral neurasthenia, post-traumatic head syndrome, traumatic constitution, punch drunk, or concussion neurosis. I shall hereafter use the term post-traumatic concussion state, or simply concussion, to designate this group. I propose to define the term and describe the condition, particularly in differential diagnosis from the functional state. The term concussion, therefore, is employed to distinguish it from brain bruising or contusion; in an uncomplicated picture it indicates no gross primary brain injury. It is caused by a different traumatic mechanism than contusion and produces a temporary abeyance of brain function; severe concussion, however, may result in irreversible brain changes. Only the later effects of brain injury are here considered, namely, those of patients who have recovered from all acute symptoms and have entered on a more or less chronic course.

Read before the Section on Nervous and Mental Diseases at the Ninetieth Annual Session of the American Medical Association, St. Louis, May 18, 1939.

THE POST-TRAUMATIC CONCUSSION STATE (CONCUSSION, TRAUMATIC ENCEPHALOPATHY)

Characteristic of brain concussion is a disturbance of consciousness, with no immediate or obvious pathologic change in the brain. It may or may not be followed by brain edema and increased intracranial pressure, depending on the severity of the injury. The early definition of Koch and Filehne [1] well describes the clinical picture.

> Concussion is a state of more or less disturbed consciousness with lost or practically lost reflexivity. The appearance is that of sleep or apparent death, there is occasional vomiting. The respiration is slow, shallow and regular, the pulse is weak, slow and generally regular, the pupils are dilated and react sluggishly, the temperature is subnormal.

Physicians do not know the neural mechanisms which produce unconsciousness or, indeed, the anatomic seat of consciousness. Concussion is a reversible and recoverable phenomena in the great majority of cases; however, in severe concussion states, both of the human being and of the experimental animal, definite pathologic changes have long been recognized and described as affecting the myelin (Schmaus [2] in experiments on spinal cords), the ganglion cells (Jakob [3]) and the blood vessels (Kocher [4]). In the past, much experimental research has been done on the nature of concussion; this was thoroughly reviewed up to the past few decades by Kocher.[5] A few of the most important of the experiments may be briefly mentioned: Duret [6] produced concussion in dogs by the sudden and forceful injection of fluid into the cranial cavity, and Koch and Filehne [1] by hammering on a board applied to the cranium. The latter authors studied the effects on brain centers and concluded that the intracerebral effects were general; all centers—respiratory, vasomotor, vagus, and pupillary—were affected and in the end became exhausted, so that function was impaired.

1. Koch, W., and Filehne, W.: Beiträge zur experimentellen Chirurgie: 3. Ueber die Commotio cerebri, Arch. f. klin. Chir. **17**: 190-231, 1874.
2. Schmaus, Hans: Beiträge zur pathologischen Anatomie der Rückenmarkserschütterung, Virchows Arch. f. path. Anat. **122**: 470, 1890.
3. Jakob, Alfons: Experimentelle Untersuchungen über die traumatischen Schädingungen des Zentralnervensystems (mit besonderer Berücksichtigung der Commotio cerebri und Kommotioneurose), in Nissl, Franz, and Alzheimer, Alois: Histologische und Histopathologische Arbeiten über die Grosshirnrinde, mit besonderer Berücksichtigung der pathologischen Anatomie der Geisteskrankheiten, Jena, Gustav Fischer, 1913, vol. 5, p. 182.
4. Kocher, Theodor: Zur Lehre der Gehirnverletzungen durch Stumpfe Gewalt, Deutsche Ztschr. f. Chir. **35**: 433, 1892-1893.
5. Kocher, Theodor: Hirnerschütterung, Hirndruck und chirurgische Eingriffe bei Hirnkrankheiten, in Nothnagel, Hermann: Spezielle pathologie und Therapie, Vienna, Alfred Hölder, 1901, vol. 9, pt. 3.
6. Duret H.: Notes sur la pathologie des traumatismes cérebraux, Gaz. méd. de Paris, 1877, pp. 598-601, 612-615, 624-526.

Ferrari [7] ingeniously placed capillary tubes filled with colored fluid and cover glasses in various parts of the brain; after concussion there was no breakage less than 5 mm. from the surface. It was observed that concussion effects were most marked in areas of transition between gray and white matter, substances of different densities. Apparently the transmitted force underwent a change of rhythm or pace, producing disruption of normal anatomic structure or disturbance of physiologic function. Kocher cited a celebrated case of cerebral softening,[8] reported by Hauser, which principally affected the white substance, was not due to vascular occlusion and caused death six days after injury. He held that the main effect was in the direction of the line of impact and that the vibratory method of experimental concussion, "hammering," was not reasonably comparable to the impact blow ordinarily producing concussion.

Scagliosi [9] first suggested that traumatic myelinic necrosis without infarction was due to damage of the neuroglia, an idea based on Cajal's theory of the nutritive function of this tissue; in support of this idea, Rand and Courville [10] found swollen oligodendroglia cells in injured brains, cells which are in especial maintenance relationship to the nerve fiber. More recent investigations have dealt with cerebral vascular changes such as are produced by the vasovagal reflex, namely, alterations in arteriolar, capillary and venous pressure and in the size of vessels and the resulting changes in blood flow and osmotic relationships. In this manner stasis, edema and anoxemia are produced.

Bright and Rokitansky, according to Gussenbauer,[11] first called attention to the presence of "punctiform" hemorrhages in concussion. It was Ricker [12] who first suggested that these small hemorrhages were produced by diapedesis and not by rhexis. He concluded that neurovasomotor disturbances produced vessel dilatation, stasis and consequent anoxemia. Cobb [13] stated that he did not unconditionally accept Ricker's vasomotor theory of diapedesis because of the relatively feeble nerve supply to the brain vessels. Interest in blood vessel pathology has recently been revived by Cassasa's [14] theory of capillary rupture by rhexis due to tearing of the vessel wall by hydrostatic pressure suddenly transmitted from the subarachnoid space to the perivascular space. Osnato and Gilberti [15] and Martland and Beling [16] have described clinical syndromes of traumatic encephalitis and "punch drunk."

With Dr. Tamaki and Dr. Newman [17] I examined a series of brains of human subjects who had died of head injuries. Serial sections were made of a number of areas showing punctiform or petechial hemorrhages. The petechiae were perivascular and fairly constantly found in these brains, but they varied in size. They rarely affected the cortex but were found in the subjacent white matter and in the deeper collections of gray matter and in the brain stem. Almost invariably were the hemorrhages the result of diapedesis, our observations thus not confirming Cassasa's theory of rupture. Our study was extended to concussion experiments on white rats, the controls being normal, untraumatized animals. By securing the animal on the end of a lever, which would be released at different heights, a traumatic head injury was produced similar to that effected by propulsion impact, a mechanism common in automobile injuries and falls. Petechiae similar to those demonstrated in traumatized human brains were reproduced. A report on these results is as yet unpublished. The traumatized brains were studied at different intervals after trauma. For the most part there were no marked departures from the normal, but in several brains perivascular gliosis was marked about a few vessels, as has been described and pictured by Rand and Courville.[18] Other vessels were obliterated and replaced by glia, and rarely vessels, obviously damaged, showed aneurysm-like degeneration and irregularities of their walls with fresh perivascular extravasations. We have therefore demonstrated in animals that in certain cases of brain concussion vessel damage is produced which runs a definite course with tendency to reparation but which may cause late accidents by vessel rupture, producing late apoplexies and softenings. As yet, however, we have not demonstrated such a late vascular accident in a series of thirty-five animals. This demonstration of structural brain effects following concussion justifies the designation of "encephalopathy." Functional impairment from vasomotor irregularities may be assumed, but as yet only assumed, to justify the term concussion neurosis.

The course of a moderately severe case of brain concussion is one of quick recovery from the immediate symptoms of shock. The duration of residual symptoms in severe uncomplicated cases rarely exceeds three months and is often considerably shorter. Symptoms of the postconcussional state are headache, vertigo, tinnitus, nervousness (usually described as explosiveness and irritability), impairment of memory (which may include events immediately preceding the accident), impairment of vision, fatigability, poor concentration, sensitiveness to heat and intolerance to alcohol. Examination often reveals a hopeful rather than discouraged patient, with a normal pulse but not infrequently a low blood pressure and a far lower incidence of lively reflexes, vasomotor disturbances and tremors than to be found in the psychoneurotic group.

Severe cases of concussion may be complicated by laceration and contusion. Even moderately severe cases of concussion may be accompanied by small surface hemorrhages of the pia arachnoid, by far the most common of all traumatic lesions. As a rule, contused and lacerated wounds of the brain may be regarded as subject to the same conditions of repair as elsewhere in the body. In the severest cases of brain injury, complicated by contusion, it is probable that the general symptoms and disability, excluding epilepsy and loss of specific function from focal lesions, are due to permanent concussion effects. The postconcussion picture differs from that following a gross lesion, as apoplexy or lobotomy for removal of a brain tumor, as any expe-

7. Ferrari, cited by Kocher,[5] p. 321.
8. Hauser, cited by Kocher,[5] pp. 293-294.
9. Scagliosi, G.: Ueber die Gehirnerschütterung und die daraus im Gehirn und Rückenmark hervorgerufenen histologischen Veränderungen, Virchows Arch. f. path. Anat. **152:** 487, 1898.
10. Rand, C. W., and Courville, C. B.: Histologic Studies of the Brain in Cases of Fatal Injury to the Head: III. Reaction of Microglia and Oligodendroglia, Arch. Neurol. & Psychiat. **27:** 605-644 (March) 1932.
11. Gussenbauer, Carl: Die traumatischen Verletzungen, Deutsche Ztschr. f. Chir. **15:** 47, 1880.
12. Ricker, Gustav: Die Entstehung der pathologisch-anatomischen Befunde nach Hirnerschütterung in Abhängigkeit vom Gefässnervensystem des Hirnes, Virchows Arch. f. path. Anat. **226:** 180, 1919.
13. Cobb, Stanley, in discussion on Schaller and others.[17]
14. Cassasa, C. B.: Multiple Traumatic Cerebral Hemorrhages, Proc. New York Path. Soc. **24:** 101, 1924.
15. Osnato, Michael, and Gilberti, Vincent: Postconcussion Neurosis—Traumatic Encephalitis: A Conception of Postconcussion Phenomena, Arch. Neurol. & Psychiat. **18:** 181 (Aug.) 1927.
16. Martland, H. S., and Beling, C. C.: Traumatic Cerebral Hemorrhages, Arch. Neurol. & Psychiat. **22:** 1001 (Nov.) 1929. Martland, H. S.: Punch Drunk, J. A. M. A. **91:** 1103 (Oct. 13) 1928.
17. Schaller, W. F.; Tamaki, K., and Newman, Henry: Nature and Significance of Multiple Petechial Hemorrhages Associated with Trauma of the Brain, Arch. Neurol. & Psychiat. **37:** 1048-1076 (May) 1937.
18. Rand, C. W., and Courville, C. B.: Histologic Studies of the Brain in Cases of Fatal Injury to the Head: IV. Reaction of the Classic Neuroglia, Arch. Neurol. & Psychiat. **27:** 1342 (June) 1932.

rienced neurologist can testify. I am not prepared at the present time to define precisely the mechanism or pathology of severe concussion, but sufficient evidence is at hand for one to recognize both the pathologic picture and the clinical course, as distinguished from those of laceration and contusion, on the one hand, and the psychic counterpart, on the other.

THE POST-TRAUMATIC PSYCHONEUROTIC STATE (PSYCHONEUROSIS, HYSTERIA)

The psychoneurotic states following trauma have been variously designated as traumatic neurosis, traumatic hysteria, litigation neurosis and compensation hysteria. I have favored the term post-traumatic psychoneurosis as one which particularly describes this condition, as it includes whatever psychic manifestations of the disorder may be present in the individual case, whether they are of neurasthenic, psychasthenic, hypochondriacal or hysterical nature; it also places the onset not at the time of trauma but after it. By definition a psychoneurosis is a condition of the mind whereby unfavorable mental influences disturb the function of the body through nervous mechanisms. According to Smith,[19] writing on neurosis in students, a psychoneurosis always serves the patient a useful purpose. Schwab [20] discerned in the war neuroses and incipient neuroses a defense mechanism. To escape from disagreeable situations there is a subconscious flight or escape into invalidism and conversion of normal bodily functions into abnormal ones. This is typified by the hysterical picture of loss of function but may be expressed by positive symptoms such as pain, uncontrolled motor behavior, anxiety and compulsions. I am aware that this extends the idea of hysteria beyond the usual symptomatic picture. The theory of conversion hysteria, however, should be valid not solely for a conventional pattern of response but also for such patterns as individual suggestibility and concepts dictate.

It appears to me that classifications of the neurotic state based on symptomatology have become unwieldy, and this holds also for the complexities of mental mechanisms sought to explain them. There is need for simplification and more basic concepts. It also appears to me that the compensation neuroses offer a particularly favorable opportunity to study basic motivations and fundamental life situations without the complications of fatigue and changed environment, as found in the war neuroses. A psychoneurosis may be likened somewhat to somatic disease having a comparatively simple etiology but an exceedingly complex symptomatology.

The term psychoneurosis will be used as the inclusive term and hysteria for the usual picture. Oppenheim [21] unfortunately designated the symptom complex now under consideration as traumatic neurosis, thus emphasizing the traumatic rather than the mental nature of the condition. His theory of a molecular change in the brain cells of course assumed something not in evidence. As one now reviews his writings, one is impressed with the admixture of symptoms now generally agreed on as psychic, such as functional anesthesias and concentric contractions of the visual fields, with symptoms due to concussion or even contusion. The Great War definitely settled the essentially psychic etiology of the so-called traumatic neuroses. A comprehensive exposition of the subject of the accident neuroses has been contributed by Huddleson.[22] Whatever theory one may apply to the cause of hysteria, the theory of suggestion, of freudianism or of conversion, there is general agreement (1) that the mechanism is purely mental, (2) that the condition is curable, (3) that this cure is brought about by mental readjustment and (4) that the cure is often brought about with such dramatic rapidity as to exclude any structural nerve change as playing any role whatever in its production.

Many years' experience leads me to believe that the ultimate psychogenic factors underlying true hysteria consist of the emotional and instinctive reactions of fear and suggestion and of wishful thinking. Serious character defects and adverse mental influences often complicate the picture. Hall and MacKay [23] discerned in the post-traumatic neuroses "marked neurosis or marked ineffectiveness of the personality before injury." Does a man refuse to work because he is covetous, indolent, antisocial, querulous or resentful, dramatizing and enjoying his invalidism; or is he of an essentially apprehensive, suggestible temperament, fearful that by returning to work and thereby forfeiting his compensation he will jeopardize his health by possible relapse of symptoms and his social security by inability to continue at occupation? Obviously, one should receive greater consideration than the other and be more amenable to rehabilitation. Persons with marked character defects are but too eager to capitalize on a minor injury; this desire is often furthered by the sympathy and solicitude of friends and relatives, by lack of occupation and interest and by an undeserved compensation award, based on a complete misunderstanding of the case and misdirected treatment, which tend to fix the psychoneurosis. Following injury a period of meditation ensues wherein inadequate personality traits and adverse mental influences combine to create a psychic climax and a point of negative departure from the natural tendency to recovery. This point of negative departure of efficiency is the "precipitation point" [24] and averages three months and seventeen days after injury. It is interesting to note that this approximates the independent estimates of Fay [25] and Munro [26] of reasonable recovery from the ordinary head injury.

In conduct and appearance the post-traumatic psychoneurotic patient is nervous and somewhat tense and depressed, eager to establish his claim of disability and voluble in detail. His good order of thought and memory in regard to his accident and subsequent history are often in striking contrast to his assertion of poor memory and concentration and mental fatigue. He deals in superlatives, picturing in dramatic style the seriousness of his injury and acuteness of his suffering. He is apt to be emotional and querulous and often asserts that he is doubtful of betterment. His complaints are numerous and on recheck examination are frequently amplified and augmented. Headache and dizziness, especially the former, are almost constantly complained of.

19. Smith, S. K.: Practical Modes of Treatment in Handling Mental Hygiene Problems in a University, Am. J. Psychiat. **13:** 57 (July) 1933.
20. Schwab, S. I.: The War Neuroses as Physiologic Conservations, Arch. Neurol. & Psychiat. **1:** 579 (May) 1919.
21. Oppenheim, Hermann: Die traumatischen Neurosen, Berlin, Hirschwald, 1889.
22. Huddleson, J. H.: Accidents, Neuroses, and Compensation, Baltimore, Williams & Wilkins Company, 1932.
23. Hall, G. W., and MacKay, R. P.: The Post-Traumatic Neuroses, J. A. M. A. **102:** 510-513 (Feb. 17) 1934.
24. Schaller, W. F., and Somers, M. R.: Psychogenic Factors and Precipitation Point in the Post-Traumatic Neuroses, J. A. M. A. **93:** 967-971 (Sept. 28) 1929.
25. Discussion of Wechsler, I. S.: Trauma and the Nervous System, J. A. M. A. **104:** 519 (Feb. 16) 1935.
26. Munro, Donald: Craniocerebral Injuries, Oxford Loose-Leaf Medicine **6:** 136 (57), 1939.

The examination of the psychoneurotic person is often a trial to the physician because of the flinching, groaning and gasping which interrupt the different tests. These patients often complain of an actual setback in their illness because of the ordeal of the examination, despite its being made with considerate care. Very often a tremor is present when the patient is asked to extend his fingers; this may diminish or cease on distraction. Sweating and lively reflexes are common. Perhaps the most prominent trait of the neurotic patient is his tendency to exaggerate in his response to tests. For example, he will show no disturbance of gait and yet will respond to tests of muscular force at the ankles by a weakness incompatible with normal walking. He will grip a dynamometer in a stiff-armed, effortless fashion. If he claims hemianesthesia, he will respond to sensory tests on both the affected and the nonaffected side with a meditated negativism which betrays a lack of candid response. Often when the limbs are crossed the patient will make flagrant errors in his responses, giving a ridiculous answer in the yes-no test. It is therefore but little wonder that the general practitioner and surgeon not trained in the complexities of psychopathologic reactions consider these patients as malingerers. It is generally held that "tests" for malingering holding valid with reference to organic disease are invalid with reference to hysteria.[27] A distinguished psychiatrist, Aaron J. Rosanoff,[28] commented on this statement by expressing the opinion that this is a distinction without a difference.

I myself do not feel that every post-traumatic neurotic person of hysterical type is a malingerer, but I do believe it is consistent with the facts to say that he is at least a subconscious simulator. A conscious simulator is a malingerer (to simulate: Latin, *simulo, simulatus,* to assume the signs or appearance of, to imitate; to malinger: French, *malingrer,* to feign illness or disability). Malingering, therefore, is of greater moral implication than simulation and may in this regard be likened to the legal term of perjury. As a medical definition I should characterize malingering as conscious, intentional and deliberate deception practiced for profit or gain. Simulation is of milder implication as regards motives and conduct. A patient may show a complete sensory loss in an extremity but also show in ordinary use of this extremity complete physiologic function, namely, sensory orientation, proprioceptive function and subconscious protection from injury. In hysterical paresis unconscious function by conventional patterns is often observed. In this sense, every hysteria is a simulator; simulation and malingering may coexist. A hysteriac, in order to impress the examiner, may consciously simulate. Certain tests have been devised in order to determine the good faith of the subject and a number of these are of doubtful value. For instance, a pin may be suddenly thrust into an allegedly anesthetic extremity and the patient brusquely withdraw this extremity. However, that this may be a purely reflex phenomenon is established by a similar reaction in a completely divided spinal cord. Pinching of the allegedly anesthetic skin of the neck may cause a dilatation of the pupil on the corresponding side. The pupil, however, may dilate as a sensory motor reflex without conscious perception.

It is my impression that there has been in late years an increasing tendency of courts and commissions to be too lenient in dealing with neurotic persons. Two quotations are here relevant, one [29] from a lay journal, the other [30] from a medical journal, voicing the experience of physicians who served in the Veterans' Administration. Those who have followed cases through the courts and accident commissions have often been greatly surprised by favorable decisions for the applicant based solely on subjective symptoms. Further, an inconsequential injury is stressed which should be considered only as a point of meditative departure for the establishment of a neurosis, and no clear distinction is made between ability to work and lack of desire to work.

In many cases, therefore, a mildly traumatized neurotic patient is compensated for defects in character and temperament rather than for injury. For an alleged injury to be etiologically valid, it should be of such prominence and importance as to be an acceptably dominant causative factor. The traumas or residuals of trauma in the traumatic psychoneuroses are not proximal or dominant factors but are remote and secondary. That this view is not extreme is evidenced by the position of Claude,[31] in France, who has urged that no compensation be awarded on account of traumatic neuroses of civilians, and in decisions of German courts [32] denying compensation for hysteria following trauma.

The prognosis for recovery in the psychoneuroses depends on when and whether the patient's character and temperament, i. e., his personality, can strike a balance with the adverse psychic factors arising both from within and from without himself. In other words, is the patient so mentally constituted, controlled, and desirous for recovery and work that he can overcome adverse and uncomfortable situations and again take his place as a useful member of society and as a social asset rather than a social liability? The greatest help that a psychoneurotic patient receiving benefits can be accorded is final settlement of his claim and return to occupation. This is demonstrated by a follow-up investigation of cases reported by me [33] in 1918.

27. Jones, A. B., and Llewellyn, L. J.: Malingering, Philadelphia, P. Blakiston's Son & Co., 1917.

28. Rosanoff, A. J.: Traumatic Hysteria vs. Malingering, California State J. Med. **30:** 197 (March) 1929.

29. The Betrayal of Popular Government, editorial, Sat. Eve. Post, Nov. 26, 1938: "The weaknesses that now beset popular government, especially our own foremost example of it, are not those of disaffection. They are weaknesses of character, of faith, of convicition, and are manifest in self distrust, in the flight from individual responsibility, dread of pain and hardship, a morbid anxiety about the pulse and circulation, love of security, the habit of turning to the government in every dilemma, the shameless struggle of groups and classes for access to the public purse, and a kind of cynicism that says, 'Because those got theirs, now we shall have ours,' until at last we see a total failure of the stern-parent tradition in American government, and in place of it the idea of beneficent government, a power at Washington, omnipotent and wise, to absorb the people's troubles, to feed and clothe and house them, to divide the national income among them by a rule of wisdom, and increasingly to administer their lives."

30. Aring, C. D., and Bateman, J. F.: Nurturing a National Neurosis, J. A. M. A. **109:** 1092 (Oct. 2) 1937: "The family life of veterans suffering from psychoneurosis was inquired into both from the veteran and from the wife who occasionally accompanied them. These veterans as a rule report their families well and happy, but their wives tell a different story. It is not unusual for the wife when queried in private to note that a child is "just like his father,' with many of the same somatic complaints, fears, food fads and addition to medicines, and express rather indirectly her own dissatisfaction. This seemed significant, although we have no statistical data on the subject. It would well form an excellent subject for investigation. It is a remarkable fact that the majority of these men assume the additional responsibility of a wife (repeated marriages seemed quite high in these veterans) and numerous children, despite the lack of energy and numerous complaints leading to invalidism or semi-invalidism. We hold no brief for the strict environmentalist, but children raised in the enervating atmosphere created by these individuals are certainly not bettered by it. Imitation of parents is a large and recognizable factor in the mental development of all of us. The onus for sponsoring a national neurosis therefore is not too large an indictment, when one considers what is taking place in our national life as a result of this unenlightened method of the treatment of a large group of the psychically ill."

31. Claude, Henri: De la nécessité du traitment précose et judicieux dans les névrose traumatiques, Ann. de méd. lég. **4:** 393 (Oct.) 1924.

32. Kollmann, M.: Compensation in Traumatic Neuroses, Deutsche med. Wchnschr. **52:** 1814 (Oct. 22) 1926; abstr. J. A. M. A. **88:** 284 (Jan. 22) 1927.

33. Schaller, W. F.: Diagnosis (Prognosis) in Traumatic Neurosis, J. A. M. A. **71:** 338 (Aug. 3) 1918.

This article does not concern itself with treatment, but it may not be amiss to assert that in the majority of cases of post-traumatic psychoneurosis, especially those of long standing, say over a year, there is no medical treatment or psychotherapy which offers any great chance of success. True, in some cases major hysteria based on fear and suggestion clears up under intensive persuasive methods reinforced by a lump sum settlement, which also acts as a prophylactic against a relapse. I am of the opinion that more of these patients would recover, or their state perhaps not be established, if no compensation law existed. The treatment of a traumatic psychoneurosis is to recognize its onset at the precipitation point and to make it unpopular and unprofitable. In none of my cases of post-traumatic psychoneurosis do I recall a single instance of the condition following injury to boys at play or in college athletics, boxers, wrestlers or jockeys. This fact, similar to the experience of many others, needs no elaboration.

TABLE 1.—*Comparison of Features Common to the Two Conditions and of Work Efficiency* *

	Post-Traumatic Concussion State (Concussion, Traumatic Encephalopathy)	Post-Traumatic Psychoneurotic State (Psychoneurosis, Hysteria)
Headache	77	97
Lively reflexes	46	76
Sweating	38	64
Tremors	33	54
Fast pulse	1	12
Low blood pressure	13	3
Attempted work with symptoms, unable to continue	11	28
Back at work with symptoms	30	6

* In 100 selected cases of concussion with severe head injury and 100 selected cases of psychoneurosis with slight head injury and no appreciable period of unconsciousness. The figures indicate percentages.

DIFFERENTIAL DIAGNOSIS

The foregoing discussion of symptoms brings out the considerable difference between the two conditions of organic and nonorganic brain syndromes following trauma. These differences are set forth in the accompanying tables. The mental attitude of the one is different from the other. The neurotic person often resents a diagnosis of minor injury and good prognosis, and his manifest exaggeration and elaboration often produce a heavy strain on the examiner's patience and credulity.

In concussion the picture is one of a general lowering of physical and psychic functions without the emotional, complaining state; frequently distinct euphoria is present. In concussion there is a natural desire for recovery and return to work; this is seen in table 1, which shows that 30 per cent of such patients continued at work with symptoms, in contrast to but 6 per cent in the neurotic group.

The concussion patient often shows amnesia of the accident and for a definite period preceding it and defects of general memory. Concentration is difficult. The neurotic patient is mentally alert. With concussion there is a history of an appreciable period of unconsciousness with more or less severe head injury, often indicated by skull fracture and scalp lacerations. Often the neurotic patient has suffered but a slight blow on the head, and there may be a considerable discrepancy between his description of the accident and the statements of witnesses. Those with concussion spontaneously improve, the neurotic tends to regress. In contrast to the concussion case, the neurotic shows an inconstancy and variability of symptoms. In concussion there is often a change of character; in the neurotic patient there is an exaggeration of predominant character traits. The course of a concussion case is not affected by settlement of compensation or litigation features; the neurotic person often recovers on such settlement.

Intolerance to heat and alcohol are frequently met in concussion. The neurotic is more apt to show objective signs of nervousness than the patient with concussion.

Twenty-three of 100 patients with concussion presented in table 1 made no complaint of headache. However, headache is an almost constant complaint of the psychoneurotic patient; in my analysis of 100 such cases but three failed to list this complaint, and in these cases the principal symptoms were focused on injury of an extremity. It has been stated that whereas paroxysmal, sharp and localized pain is characteristic of the organic headache, a sensation of constant pressure is typical of the psychoneurotic type. A tabulation of my cases has failed to reveal this distinction, as the headaches in both conditions are variously described as to character, location and duration. This similarity may be explained by the replacement of a true concussion headache by its psychic equivalent in the psychoneurotic person, owing to psychic fixation, and thus also may the difference in incidence be explained.

True vestibular vertigo, often found in the concussion state, is described as a feeling of whirling, and this type may be established by appropriate vestibular functional tests. In the psychoneurotic state the complaint of dizziness is more properly expressed by giddiness.

TABLE 2.—*Differential Diagnosis of Major Symptoms*

Post-Traumatic Psychoneurotic State (Psychoneurosis Hysteria)	Post-Traumatic Concussion State (Concussion, Traumatic Encephalopathy)
1. Does not wish to work	Wishes to work
2. Depressed, emotional, complaining	Euphoric, aggressive, periods of explosive irritability
3. Mentally alert	Amnesia of injury; memory and concentration difficult
4. Aggravation of inherent personality defects	Changes from original personality makeup
5. Frequently slight injury	Often severe injury, followed by long period of unconsciousness
6. Hysterical symptoms and signs	No hysterical symptoms and signs
7. Exaggeration and elaboration in statement and behavior	No exaggeration or elaboration in statement and behavior
8. Course: tendency to aggravation	Course: tendency to improvement
9. Favorable effect of termination of compensation or of settlement	No effect of termination of compensation or of settlement
10. Multiplicity, changeability, and indefiniteness of symptoms	Constant and precise symptomatology
11. Headache rarely absent	Headache frequently absent
12. Dizziness: giddiness	Dizziness: vertigo
13. No disturbance of tolerance to heat and alcohol	Intolerance to heat and alcohol

The foregoing material describes the contrasting pictures of uncomplicated cases of concussion and psychoneurosis. Obviously, they may coexist in the same patient or be further complicated by organic paralysis from brain laceration and contusion and by malingering. Such a complicated picture may be difficult at times to evaluate, especially in a malingerer. A study of performance in a suspected malingerer when he is unaware of observation is of great value.

Finally, a word as to the responsibility of the physician in the production and recognition of the psycho-

neurotic state. Too often the physician does not realize the suggestibility and apprehension of the ordinary lay person in any circumstance which affects his bodily state or feeling of well-being. An unguarded statement as to the severity of trauma or outlook for recovery, if this carries the idea of any doubt, may precipitate a psychoneurosis. Treatment of the neurotic person for his original injury is often unduly prolonged without the suspicion that his symptoms are mental in origin.

However, the mental origin may be recognized fairly early by the physician in charge of an industrial case, and settlement or final rating of compensation award may be strongly recommended; in this event, responsibility for long-continued treatment without improvement rests on the court or the industrial accident commission referee, who with the commendable intention of protecting the interests of the claimant, refuses to authorize a settlement and insists on further treatment, adopting a "post hoc, ergo propter hoc" attitude. This refusal constitutes a powerful suggestion of serious injury, which falls on fertile ground in the mind of the psychoneurotic, thereby further fixing his neurosis and rendering useless efforts of subsequent treatment.

SUMMARY AND CONCLUSIONS

The term traumatic neurosis should be discarded and replaced by a more fitting and descriptive classification.

After-effects of head injury may be classified as contusion, concussion, psychosis and psychoneurosis, all essentially different conditions.

The post-traumatic concussion state produces reversible changes of brain function which, in severe cases, may become irreversible, with demonstrable pathologic change.

The post-traumatic psychoneurotic state, characterized by fear, suggestion and wishful thinking, is due to the precipitation of psychic complexes, following a period of meditation, in patients presenting inadequate personality traits and subjected to adverse mental influences.

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ABSTRACT OF DISCUSSION

DR. GEORGE W. HALL, Chicago: In cases of concussion the patients are more susceptible to the effects of alcohol. I observed a man with a history of having been able to take alcohol moderately without any disturbances whatever until he became a prize fighter. He was knocked out on one or two occasions and after those incidents his personality changed. At present he is most affable when not under the influence of liquor, but two or three drinks now will make him extremely vicious. On one occasion he threw a milk wagon driver out of his wagon, threw the bottles on the driver and drove off with the car. He drove into a garage, picked up another car and traveled a little farther before he was arrested. He spent about six months in jail for that offense, and a week or two ago he took his mother's new car out and it was found front-first down the stairs of an empty basement as a result of his taking alcohol. Yesterday Dr. Hartman stated that oxygen is the agent for the cure of acute alcoholism. It may be that in these cases of concussion the brain cells are so damaged that they are unable to absorb the oxygen from the blood in the quantities which the brain cells of a normal person can absorb it, and that is so, according to Dr. Hartman, when the person is under the influence of alcohol. I think that point is well taken in Dr. Schaller's paper as one of the differential points between concussion and psychoneurosis. The other point, of course, is the wish fulfilment in the neurotic, whereas patients with concussion do not desire to quit work. I recall another recent instance in which a man worked four months with a headache following an injury, until finally he suffered such vertiginous attacks that the manager of the concern caused him to lie off from his work. When he came into the hospital he showed none of the signs that one expects to find in cases of psychoneurosis, no sensory disturbances whatever, and his whole ambition was to forget it all and return to work.

DR. SIDNEY I. SCHWAB, St. Louis: I do not know of any way to measure the effect of a head trauma which produces so-called organic changes. Some of the most difficult cases to handle have been cases in which the trauma was insignificant and the long-distance effects, even assuming that they were organically produced, were long and continuous. On the other hand, if we consider the psychoneurosis, we shall have the same difficulty in measuring the effect and violence of the blow or of the trauma in relation to the remote or recent symptomatic results. Whether one calls these after-effect neuroses or concussive syndromes, or whatever designation one chooses to place on them, the question at issue is What is the nature of the damage to the individual? It does not make a lot of difference if the patient is distorted from a personality point of view owing to an organic destruction of brain elements or whether he is distorted from a personality point of view by virtue of the development and evolution of a neurosis. I see no evidence at present by which an organic disease or a neurosis can be differentiated in terms of mechanism and changes or alterations within the neural mechanism. What we are dealing with here in this artificial separation of these two categories of disease is with the method of examination. We do not have delicate enough instrumentations to determine where in between the dividing line, as the author of this paper has so sharply differentiated, organic changes end and other changes begin. While this differentiation clinically is of value, I do not see that it throws any light on the nature of the changes which involve the personality of both the organically affected individuals and those so-called inorganically affected individuals. This type of traumatic disease cannot be differentially diagnosed on parallel symptomatic groups, certainly in any kind of series of cases which have hitherto been published. The percentage of error in personality and personal reaction is so great that the small 200 or 500 cases amounts to no more than imaginative contributions to the truth. This is a valuable paper because it opens up those vital questions which are facing neuropsychiatrists, neurosurgeons and internists the world over, the association and the coordination and penetration of what was formerly called organic changes into the total life of the organism. Our neuropsychiatric duty is to assess the damages to the person and not to assess the damages in points of litigation.

DR. HARRY E. MOCK, Chicago: Dr. Schaller's paper contains material of value to general practitioners, who see a great number of head injuries and first come in contact with the complications following head injuries. It is natural that as neurologists we should discuss the cerebral pathology and the terminology. The chief point, whether we call it "concussion syndrome" or "persistent cerebral contusion," is that something has happened to that individual's brain from the head injury, be it a slight injury or a serious injury, which causes persistence of symptoms. The skull fracture exhibit which we have at this meeting is visited by many doctors from the smaller communities, and the commonest question asked is What would you do in this case? The histories are usually the same: This housewife, this farmer, this school child had a slight injury, a blow, a fall or an automobile accident and remained unconscious two or three hours. Most of these patients are treated in their homes, most of them remaining quiet in bed for a short period, but after a few days of activity they complain of headaches, dizziness and ringing in the ears, they become despondent and they cry easily or are aggressive. Some of these inquiring doctors think the condition is simply mental, others that it is a traumatic neurosis, while others are anxious to know whether there is any remaining pathologic condition in the brain. In my work many cases are referred for examination with the statement from the referring doctor or insurance company that the patient is a malingerer or a traumatic neurotic. About 80 per cent of these will show some neurologic manifestations or evidence of persistent increased pressure by spinal puncture and manometer reading, while the remaining 20 per cent have no signs and belong in the psychoneurotic group. A careful

study of this so-called post-traumatic concussion group reveals incomplete treatment during the acute stage, an unsympathetic attitude and a misunderstanding of the condition of the patient during his convalescent stage by his doctor and his family and, in many instances, a prolongation of the condition into a true psychoneurotic condition by compensation and litigation problems. Too many are prone to consider all the cases as belonging in the latter class. This is wrong, for many a true traumatic syndrome following a head injury continues even after the settlement is made. The majority of these require a regimen of treatment quite similar to that which they should have had during the acute condition, namely, absolute rest in bed, reduction of the persistent increased intracranial pressure, sometimes by lumbar puncture, usually by a carefully guided dehydration program, and, above all, the avoidance of all disturbing influences until their symptoms have abated. Only a few of them will require encephalography and neurosurgical treatment.

DR. R. P. MACKAY, Chicago: It is not a problem as to whether the patient has either structural damage or psychologic damage but as to how much of each he has. That means that we must not only evaluate the extent to which a neurosis may be present but we must attempt to find out, even if a neurosis is present, to what extent there is also an organic lesion. One syndrome is exceedingly common in these cases. I refer to the postural vertigo and headache which at least half the patients with considerable head injury show, and it is so stereotyped that it could not possibly be due to psychologic factors. The patients report that if they lie in a particular position they have rotary vertigo or that turning the head in a certain direction will produce the vertigo. Not infrequently the headache will be brought on by a certain position or movement of the neck or head. This is one more syndrome which seems to indicate that structural changes have occurred. What the mechanism for the production of the syndrome is I do not know, but I am sure it is "organic" in nature.

DR. LEOPOLD BRAHDY, New York: I want to state briefly my experience. I tried lump sum settlements in industrial compensation cases but they proved a failure. I now tell the postconcussion patient that he may have lighter work at his regular wages for a specific period of time; that a job is there for him if he wants to take it; that if not, his compensation will continue; that if he cannot resume his usual work at the end of the specified time he will be put back on compensation. I have had excellent results with this method. The symptoms have not always disappeared (some complain of headaches from one to three years afterward) but these men are working and are in good health. Dr. Schaller said that the onset of psychic symptoms is about three and one-half months after injury. I think my procedure has shown that the important factor in preventing development beyond the organic damage done by the concussion is to get such a patient back to work. That is a form of therapy the beneficial effects of which cannot be obtained by occupational therapy in an institution, useful as that may be in other conditions. Such a patient must get back to his normal environment among his fellow workers, doing something he regards as real work for wages. This procedure has been successful with me. I should like Dr. Schaller to comment on whether in some of these cases the differential diagnosis by laboratory methods, especially encephalograms, isn't undertaken too early. It does not matter whether we find out from two months to six months after an injury that we are dealing with encephalopathy. If the symptoms are psychoneurotic, we do not help a psychoneurotic patient by subjecting him to encephalograms when a delay of a few months will clarify the diagnosis without such procedure. If it is an encephalopathy, we shall know soon enough that we cannot help him.

DR. WALTER F. SCHALLER, San Francisco: In answer to Dr. Hall: It was the question of the significance of traumatic petechial hemorrhages that led me to the consideration of concussion pathology. The majority of these punctiform hemorrhages in brains showing no gross lesions are due to diapedesis and not to rhexis. Such petechial hemorrhages are not lesions which are produced or which cause damage at the time of accident. Patients do not die from petechial hemorrhages, and these are probably not the most important pathologic change in concussion. It was difficult to present a paper on a subject of this scope and importance in fifteen minutes. Perhaps five years ago I should have accepted Dr. Schwab's position as to the impracticability of a differential classification between the two conditions discussed, but since I have studied the minute pathology of brain trauma and clinically analyzed a large group of cases of both functional and organic nature I have arrived at the conclusion that it is high time that a differential diagnosis be formulated and all these cases, even though their symptoms and signs may be somewhat similar, not be thrown into the grab-bag of what is often called "post-traumatic head syndrome." I am not aware that any such tabulation as I have made has been attempted heretofore. If my tables do not show the differentiations that I believe are possible and desirable between concussion and psychoneurosis, better tables should be prepared. Serious concussion effects may occur from slight injuries in individuals who are particularly vulnerable. In answer to Dr. Brahdy: I consider laboratory methods of undoubted value in differential diagnosis, particularly when we wish to rule out gross lesions and contusions. The cases here reported were seen an appreciable time after injury, and in such cases, and also in those in which the acute symptoms have subsided, I do not consider encephalography contraindicated.

THE PREVENTION OF CAROTENE ABSORPTION BY LIQUID PETROLATUM

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It has been shown by several workers [1] that, when rats were fed diets supplying the provitamin carotene, vitamin A deficiencies developed if liquid petrolatum was added to the diets in amounts comparable to the accepted dosage for human beings. Dutcher, Harris, Hartzler and Guerrant [2] have reported experiments showing that the carotene of a mixture of carotene and liquid petrolatum was not utilized when fed to animals but that the vitamin A of a carotene-free cod liver oil concentrate mixed with liquid petrolatum was absorbed quite readily from the gastrointestinal tract. They believed that the lack of absorption of carotene was due to the greater solubility of the hydrocarbon carotene in the hydrocarbon liquid petrolatum and that vitamin A was absorbed because of the greater solubility of the sterol vitamin A in the sterols of the gastrointestinal tract. Further work by Mitchell [3] and by Jackson [4] confirms the difference in the effect of ingested liquid petrolatum on the absorption of carotene and vitamin A in animals. Dutcher, Harris, Hartzler and Guerrant [2] have shown that animals eating a diet of known carotene content apparently absorbed most of it, for but little carotene was excreted in the stools. This small amount, however, was constant and did not increase even though the carotene content of the diet was considerably increased. When liquid petrolatum was given to animals on this diet the amount of carotene

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1. These include:
Burrows, M. T., and Farr, W. K.: Proc. Soc. Exper. Biol & Med. **24**: 719 (April) 1927.
Dutcher, R. A.; Ely, J. O., and Honeywell, H. E., ibid. **24**: 953 (June) 1927.
Moness, E., and Christiansen, W. G.: J. Am. Pharm. A. **18**: 997 (Oct.) 1929.
Rowntree, J. I.: J. Nutrition **3**: 345 (Jan.) 1931.
Jackson, R. W., ibid. **4**: 171 (July) 1931.
Dutcher, Harris, Hartzler and Guerrant.[2]
Mitchell.[3]
Jackson.[4]

2. Dutcher, R. A.; Harris, P. L.; Hartzler, E. R., and Guerrant, N. B.: J. Nutrition **8**: 269 (Sept.) 1934.

3. Mitchell, H. S.: Proc. Exper. Biol. & Med. **31**: 231 (Nov.) 1933.

4. Jackson, R. W.: J. Nutrition **7**: 607 (June) 1934.

excreted in the stools was roughly proportional to the amount of liquid petrolatum ingested.

One of us [5] has reported experiments on adult patients showing that plain liquid petrolatum given in amounts of 20 cc. before each meal or 20 cc. before the morning and evening meals would lower blood carotene

TABLE 1.—*The Effect of Various Preparations of Liquid Petrolatum, Taken in Amounts of 20 Cc. Three Times a Day Before Meals, on the Blood Carotene Levels of Patients on a Constant High Carotene Diet of 24,089 International Units of Vitamin A*

	Blood Carotene Determinations, Dichromate Units							
	Diet Only					Diet Plus Liquid Petrolatum Prep.		
Preparation	Fasting	4th Day	8th Day	11th Day	14th Day	4th Day	9th Day	12th Day
Liquid petrolatum, agar and water....	8.0	11.5	13.0	12.0	12.5	10.5	8.0	6.0
Emulsified liquid petrolatum.....	7.0	8.0	13.0	14.0	14.0	12.0	10.0	7.0
Liquid petrolatum with 0.26% carotene	17.0	19.0	23.0	24.0	25.0	23.0	22.0	21.0
Liquid petrolatum with 0.28% carotene	6.0	9.0	10.0	12.0	12.0	12.0	12.0	12.0

levels previously elevated by a high carotene diet. In each study the patients ate weighed diets of known constant high carotene and caloric values. In part of this experiment the liquid petrolatum was discontinued and only the diet continued. The blood carotene values, which previously had remained constant or even decreased, would rise appreciably. Plain liquid petrolatum in the amount of 30 cc. taken before retiring seemed to us at that time to have little measurable effect on carotene absorption.

Because many human beings obtain much of their vitamin A by conversion of the provitamin carotene into vitamin A and in view of the frequency that one of the many preparations of liquid petrolatum is prescribed for the relief of constipation or as a substitute for fat in a

TABLE 2.—*The Effect of Various Preparations of Liquid Petrolatum, Taken in Amounts of 20 Cc. Twice a Day Before the Morning and Evening Meals, on the Blood Carotene Levels of Patients on a Constant High Carotene Diet of 30,000 International Units of Vitamin A*

	Blood Carotene Determinations, Dichromate Units							
	Diet Only				Diet Plus Liquid Petrolatum Prep.			
Preparation	Fasting	3d Day	7th Day	10th Day	3d Day	8th Day	15th Day	20th Day
Liquid petrolatum, agar and water....	7.0	10.0	10.0	10.5	10.0	8.5	6.0	5.5
Emulsified liquid petrolatum.....	6.5	8.0	10.0	12.0	10.0	9.5	8.0	7.0
Liquid petrolatum with 0.26% carotene	6.0	8.0	11.0	13.0	12.5	10.5	9.0	8.5
Liquid petrolatum with 0.28% carotene	7.0	9.0	10.0	10.0	12.0	12.0	12.0	13.0

reduction diet regimen, it seemed to us important to determine whether a 65 per cent emulsified solution of liquid petrolatum, agar and water and an 80 per cent emulsion of liquid petrolatum would have the same relative effect on removing carotene from the food of the gastrointestinal tract as plain liquid petrolatum. It also seemed important to determine whether liquid petrolatum, presaturated with carotene both at room and at body temperature, would protect the carotene contained in the food of the gastrointestinal tract.

METHODS

In general, three types of experiments were carried out. In each of the three experiments, four different patients were given diets of constant caloric and carotene values. The diets were weighed and consisted of two menus, which were alternated daily to afford variety. The patients remained on these diets throughout the experiment. The vitamin A value of the daily diet in the first experiment was 24,089 international units of vitamin A. The vitamin A value, expressed in international units, of the second and third experiments was 30,000.

In the first experiment each patient ate a weighed diet for a period of fifteen days. Following this interval the first patient in this experiment was given 20 cc. of a solution of liquid petrolatum, agar and water three times a day before meals. The second patient received the same amounts of a solution of emulsified liquid

TABLE 3.—*The Effect of Various Preparations of Liquid Petrolatum, Taken in Amounts of 30 Cc. Before Retiring, on the Blood Carotene Levels of Patients on a Constant High Carotene Diet of 30,000 International Units of Vitamin A*

	Blood Carotene Determinations, Dichromate Units											
	Diet Only						Diet Plus Liquid Petrolatum Preparation					
Preparation	Fasting	3d Day	6th Day	7th Day	9th Day	10th Day	4th Day	5th Day	7th Day	8th Day	10th Day	11th Day
Liquid petrolatum, agar and water.....	10.0	12.0	....	13.0	....	13.0	....	13.0	....	13.0	....	13.0
Emulsified liquid petrolatum	8.0	11.0	11.0	....	13.0	....	12.5	....	....	11.0	....	11.5
Liquid petrolatum with 0.26% carotene...	7.0	8.5	10.0	....	9.0	....	9.0	....	....	8.5	....	8.0
Liquid petrolatum with 0.28% carotene...	14.0	20.0	22.0	....	....	22.0	27.0	....	....	27.0	....	28.0

petrolatum. The third patient received the same amounts of a solution of liquid petrolatum saturated with carotene at room temperature (0.26 per cent). The fourth patient received similar amounts of a solution of liquid petrolatum saturated with carotene at body temperature (0.28 per cent). All patients in the first experiment received the various preparations of liquid petrolatum for eleven days. No attempt was made to mix the preparations of liquid petrolatum with the food, but since the liquid petrolatum was given before mealtime there must have been such a mixing in the gastrointestinal tract. Blood carotene determinations were done at intervals throughout all three experiments by the method of White and Gordon.[6] The mixture of carotene and liquid petrolatum was not unpleasant to taste. It was orange in color with an aromatic odor like fresh raspberries and tasted somewhat like fresh pumpkin.

The second experiment was a counterpart of the first except that before the morning and evening meals the patients were given 20 cc. of solutions of liquid petrolatum, agar and water; emulsified liquid petrolatum; liquid petrolatum with 0.26 per cent of carotene, and

5. Curtis, A. C., and Kline, E. M.: Influence of Liquid Petrolatum on the Blood Content of Carotene in Human Beings, Arch. Int. Med. **63**: 54 (Jan.) 1939.

6. White, F. D., and Gordon, E. M.: J. Lab. & Clin. Med. **17**: 53 (Oct.) 1931.

liquid petrolatum with 0.28 per cent carotene. The four patients in the second experiment remained on the diet of 30,000 international units of vitamin A for eleven days and then, in addition to the diet, took one of the several preparations of liquid petrolatum for twenty days.

The third experiment was likewise a counterpart of the first experiment except that, before retiring, when the upper part of the gastrointestinal tract was probably empty, the patients were given 30 cc. of solutions of liquid petrolatum, agar and water; emulsified liquid petrolatum; liquid petrolatum with 0.26 per cent of carotene, and liquid petrolatum with 0.28 per cent carotene. All patients in this group received the diet of 30,000 international units of vitamin A for ten days and the diet plus one of the preparations of liquid petrolatum for eleven days thereafter.

RESULTS

It will be seen in table 1 that all patients had a rise in the blood carotene levels during the period when they were taking only the high carotene diet. However, when either of the solutions of liquid petrolatum, agar and

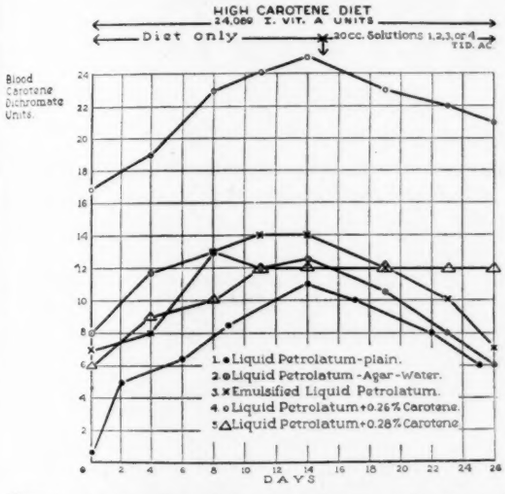
HIGH CAROTENE DIET
24,000 I. VIT. A UNITS
Diet only
20 cc. Solutions 1,2,3, or 4 T.I.D. A.C.
Blood Carotene Dichromate Units.
1. • Liquid Petrolatum-plain.
2. ● Liquid Petrolatum-Agar-Water.
3. × Emulsified Liquid Petrolatum.
4. ○ Liquid Petrolatum+0.26% Carotene.
5. △ Liquid Petrolatum+0.28% Carotene.
DAYS

Chart 1.—A comparison of the effect of 20 cc., taken three times a day, of plain liquid petrolatum, liquid petrolatum, agar and water, emulsified liquid petrolatum, liquid petrolatum saturated at 22 C. with carotene and liquid petrolatum saturated at 37 C. with carotene on the blood carotene levels. The plain and emulsified types of petrolatum have about the same relative effect. Liquid petrolatum, presaturated with carotene at room temperature, slightly protects the ingested carotene. When liquid petrolatum presaturated with carotene at body temperature is given, the blood carotene level remains constant.

water or emulsified liquid petrolatum was given in amounts of 20 cc. before the three meals the blood carotene levels promptly fell. When a solution of liquid petrolatum with 0.26 per cent carotene was given the blood carotene level remained more constant than with the other two preparations, thus partially maintaining the higher blood carotene level reached when the high carotene diet alone was eaten. When a solution of liquid petrolatum with 0.28 per cent carotene was given, the blood carotene level remained constant.

Table 2 again shows the rise in blood carotene values which occurred when the diet alone was eaten for a period of eleven days. When 20 cc. of either the solution of liquid petrolatum, agar and water or emulsified liquid petrolatum was taken for a period of twenty days before the morning and evening meals, the blood carotene fell to a level lower than the original in the first instance and just short of the original level in the second instance. When a solution of liquid petrolatum with 0.28 per cent carotene was given, the blood carotene level rose three dichromate units in twenty days.

Table 3 shows that when 30 cc. of solutions of liquid petrolatum, agar and water, emulsified liquid petrolatum, liquid petrolatum with 0.26 per cent carotene, or liquid petrolatum with 0.28 per cent carotene is used nightly for eleven days following a period of ten days on constant diets of 30,000 international units vitamin

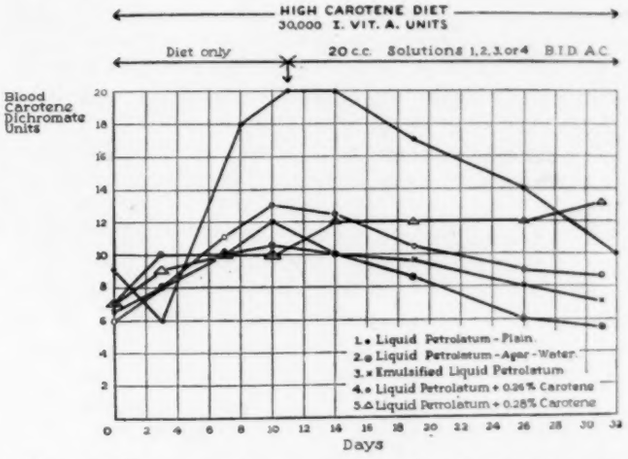
HIGH CAROTENE DIET
30,000 I. VIT. A. UNITS
Diet only
20 c.c. Solutions 1,2,3 or 4 B.I.D. A.C.
Blood Carotene Dichromate Units
1. • Liquid Petrolatum - Plain.
2. ● Liquid Petrolatum - Agar - Water.
3. × Emulsified Liquid Petrolatum.
4. ○ Liquid Petrolatum + 0.26% Carotene.
5. △ Liquid Petrolatum + 0.28% Carotene.
Days

Chart 2.—When 20 cc. of the same preparations is used twice a day before meals the same relative effects are noted as in chart 1.

A, the effect of the petrolatum on the absorption of carotene is variable. The administration of the solution of liquid petrolatum, agar and water caused no reduction of the blood carotene level. The solution of emulsified liquid petrolatum possibly caused a slight reduction of the blood carotene level. This slight reduction was also evident when plain liquid petrolatum containing an added 0.26 per cent carotene was admin-

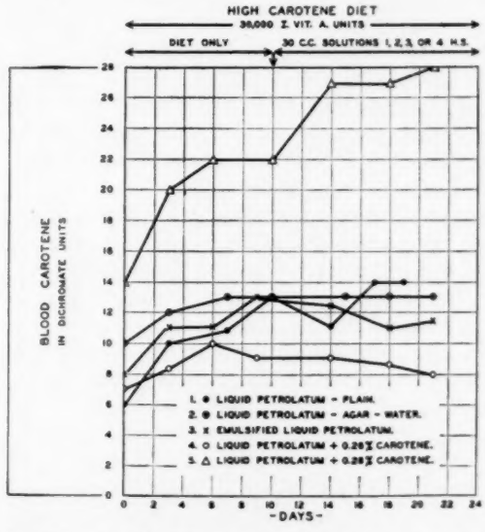
HIGH CAROTENE DIET
30,000 I. VIT. A. UNITS
DIET ONLY
30 C.C. SOLUTIONS 1, 2, 3, OR 4 H.S.
BLOOD CAROTENE IN DICHROMATE UNITS
1. • LIQUID PETROLATUM - PLAIN.
2. ● LIQUID PETROLATUM - AGAR - WATER.
3. × EMULSIFIED LIQUID PETROLATUM.
4. ○ LIQUID PETROLATUM + 0.26% CAROTENE.
5. △ LIQUID PETROLATUM + 0.28% CAROTENE.
-DAYS-

Chart 3.—When the five different preparations of liquid petrolatum are given in amounts of 30 cc. before retiring, none have any marked effect on blood carotene levels except the preparation of liquid petrolatum presaturated with carotene at body temperature (37 C.). The increase in blood carotene levels when this preparation was given suggests that even 30 cc. of plain or emulsified liquid petrolatum given before retiring affects the ability of the intestinal tract to absorb carotene from ingested food.

istered. When liquid petrolatum with added carotene in amounts of 0.28 per cent was taken, the blood carotene level actually rose.

COMMENT

The results of the experiments listed show that solutions of liquid petrolatum, agar, water and emulsified liquid petrolatum taken in amounts of 20 cc. three times a day before meals or 20 cc. twice a day before

the morning and evening meals interfered with the transportation of carotene across the epithelium of the intestine, if the fasting blood carotene levels may be used as an index for such absorption. Liquid petrolatum, saturated with carotene at room temperature (0.26 per cent) and taken in similar amounts still interfered with the carotene absorption from the food of the intestinal tract. When liquid petrolatum saturated with carotene at body temperature (0.28 per cent) was taken in amounts of 20 cc. either three times a day or twice a day before meals, the blood carotene levels remained constant or even increased slightly.

The effect of the two emulsified types of liquid petrolatum was not striking when taken in amounts of 30 cc. before retiring. The 0.26 per cent carotene saturated liquid petrolatum also seemed to have little effect. But when the effect of these three preparations are compared with the 0.28 per cent carotene saturated liquid petrolatum, it suggests that even in doses of 30 cc. nightly liquid petrolatum interferes with the organism's ability to absorb carotene from the ingested food.

In a previous experiment one of us [5] showed the effect of 20 cc. of a plain liquid petrolatum taken three times daily, twice daily and in amounts of 30 cc. taken before retiring on carotene absorption from ingested food. If the results of these experiments are compared with the effects of similar doses of liquid petrolatum, agar and water, emulsified liquid petrolatum, and 0.26 per cent and 0.28 per cent carotene saturated liquid petrolatum (charts 1, 2 and 3) it is apparent that the emulsified types of liquid petrolatum remove about the same amount of carotene from the food of the intestinal tract even though the oil content of the emulsified types of liquid petrolatum is 65 per cent and 80 per cent respectively. When added carotene is present in amounts of 0.26 per cent at 0.22 C. the absorption of carotene by liquid petrolatum from ingested food is reduced, but it still occurs. When liquid petrolatum saturated with carotene at body temperature (0.28 per cent at 37 C.) is given, the ingested carotene bearing foods are protected and the blood carotene levels do not decline.

It was not apparent at first why liquid petrolatum saturated with carotene at room temperature failed to protect the carotene of ingested food while saturation at body temperature did so, for the difference in saturation was only 0.02 per cent. Is is easily explained, however, if one expresses the saturation of liquid petrolatum with carotene at these temperatures in international vitamin A units. At body temperature it requires 280,000 international vitamin A units of carotene to saturate 60 cc. of plain liquid petrolatum. At room temperature it requires 240,000 international vitamin A units of carotene to saturate 60 cc. ofplain liquid petrolatum. This difference of 40,000 units in the saturation of liquid petrolatum with carotene at room and body temperatures is greater than the total number of vitamin A units in our high carotene diets. These calculations also show the relative unsaturation of liquid petrolatum as far as carotene is concerned and also make it understandable why even 30 cc. of liquid petrolatum interferes with the absorption of carotene by the gastrointestinal tract.

CONCLUSIONS

1. Two emulsified types of liquid petrolatum, the first containing 65 per cent liquid petrolatum, 1 per cent agar and 34 per cent water, and the second containing 80 per cent liquid petrolatum, 1 per cent agar and 19 per cent water, were given in amounts of 20 cc. three times a day before meals, twice a day before meals and 30 cc. before retiring. The effect of these emulsified preparations of liquid petrolatum on the absorption of carotene from the gastrointestinal tract was compared with the effect of similar doses of plain liquid petrolatum and found to be comparable.

2. Plain liquid petrolatum, saturated at room temperature with carotene (0.26 per cent at 22 C.) still removes carotene from ingested food, but in lesser amounts.

3. Plain liquid petrolatum saturated with carotene at body temperature (0.28 per cent at 37 C.) prevents the petrolatum from removing carotene from the food in the gastrointestinal tract.

STREPTOCOCCUS VIRIDANS BACTEREMIA FOLLOWING EXTRACTION OF TEETH

A CASE OF MULTIPLE MYCOTIC ANEURYSMS IN THE PULMONARY ARTERIES: REPORT OF CASES AND NECROPSIES

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AND
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ROCKFORD, ILL.

Streptococcus viridans is constantly present in alveolar infection and frequently enters the blood stream when these infected areas are traumatized. Other organisms are less regularly present and Streptococcus viridans enters the blood stream from this focus much more frequently than all others combined. The resulting bacteremia is usually transient, but a knowledge of the frequency and mechanism of its occurrence is essential to an understanding of the pathogenesis of the secondary foci of localization—notably subacute bacterial endocarditis. It is our purpose in this paper to reveal our experience as to the frequency of bacteremia following tooth extraction and to portray the consequences incident thereto through the report of (1) well studied clinical cases with postmortem examinations and (2) bacteriologic examination of the teeth and blood of persons undergoing tooth extraction.

REPORT OF CASES

CASE 1.—*History.*—A white man aged 44, a patient of Dr. Arthur Pearman, had always enjoyed satisfactory health in spite of the known presence of a congenital cardiac lesion. Because of the congenital anomaly of the heart he had been spared strenuous activities but had been able to carry on in ordinary school and business life without physical complaint. Immediately after the extraction of several teeth in December 1936 he complained of weakness, sweating and mild prostration and had a fever of the septic type. The morning temperature was usually normal, but there was a temperature of from 100 to 101 F. each evening. The pulse was 110 and the blood pressure 138 systolic, 75 diastolic. The area of cardiac dulness was enlarged approximately 2 cm. to the left. There was a loud harsh roaring "machinery murmur," with its greatest intensity at the second and third interspace to the left of the sternum. In spite of the great intensity, it was not widely transmitted and did not extend more than 5 cm. in any direction from the area of the pulmonic valve. The murmur was systolic in time and continued throughout most of the diastole. The spleen was palpable but not painful. The hemoglobin was 11 Gm.; red blood cells numbered 4,290,000 and white blood cells 8,350. Blood culture yielded Streptococcus viridans.

From the Laboratory of the Rockford Hospital.

The course had a duration of one year and there was but little variation. Petechiae in the skin or mucous membranes were never observed. He had drenching night sweats, afternoon fever and a gradually developing pallor. Cyanosis was not observed. Only during the last four weeks did he complain of pain. This was in the "lungs" and he was unable to lie on either side. Positive blood cultures for Streptococcus viridans were obtained on each attempt.[1] The patient died in December 1937 with evidence of increasing cardiac failure. The clinical diagnosis was subacute bacterial endocarditis implanted on a congenital anomaly.

Necropsy.—There was a small amount of fluid in each pleural cavity. The heart was surrounded by 500 cc. of serofibrinous exudate and the pericardial surfaces had a shaggy "bread and butter" appearance. The heart weighed 550 Gm. and had a transverse diameter of 16 cm. The right side was especially enlarged. The pulmonary artery was greatly enlarged. The pulmonic leaflets were thickened by large gray vegetations and thrombi. The valve was incompetent. Vegetative masses extended upward on the wall of the pulmonary artery, and on the left lateral wall there was a mycotic aneurysm 4 cm. in diameter. This was partially lined by clot, but the wall of the artery was completely destroyed and the pericardium was sacculated. This lesion explained the origin of the pericarditis. Streptococcus viridans was present in the pericardial exudate. The orifice of the left pulmonary artery was at the upper limit of this aneurysm. Anterior to this opening was the orifice of a patent ductus anteriosus 1.5 cm. in diameter (fig. 1). There was much calcification of the wall of the ductus arteriosus and of the adjacent areas in the pulmonary artery and aorta. The lungs were edematous and relatively atelectatic throughout. Dissection of the pulmonary arteries revealed multiple mycotic aneurysms (figs. 2 and 3). They varied in diameter from a few millimeters to 3 cm., and most of them were occluded by fibrinous clot. None of them showed evidence of suppuration.

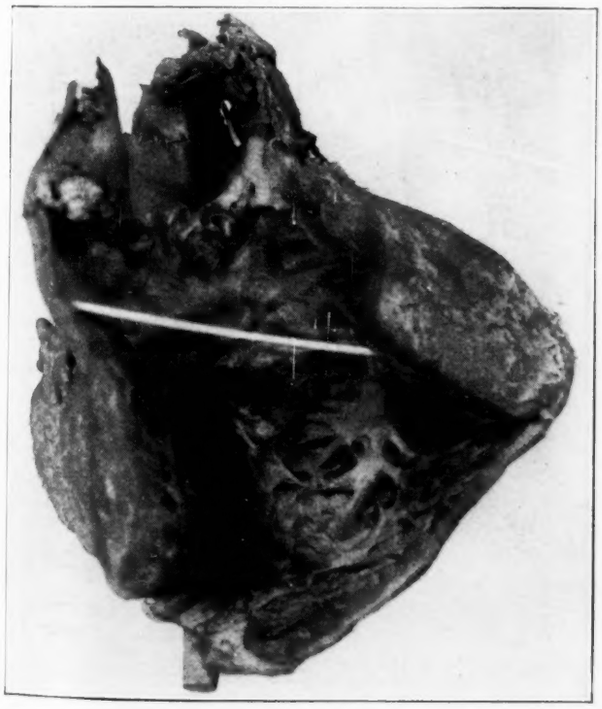

Fig. 1 (case 1).—Probe passing through patent ductus arteriosus. Vegetations on pulmonic valve and wall of pulmonary artery. Mycotic aneurysm in the pulmonary artery. Pericarditis.

Embolic phenomena were not demonstrated in any part of the greater circulation. Changes in the organs were those that accompany sepsis and chronic passive congestion. The spleen weighed 620 Gm. and measured 20 cm. from pole to pole. It was firm and had the uniform red color of reticulo-endothelial hyperplasia. Microscopically the aneurysms showed the internal elastic membrane ruptured and the sac formed mostly of adventitia. In the kidneys a few glomerular capillaries contained large numbers of polymorphonuclear leukocytes, and still fewer showed pericapsular areas of inflammation. The picture of multiple embolization of the glomeruli was not present. Microscopic examination of other tissues added nothing to the gross interpretation.

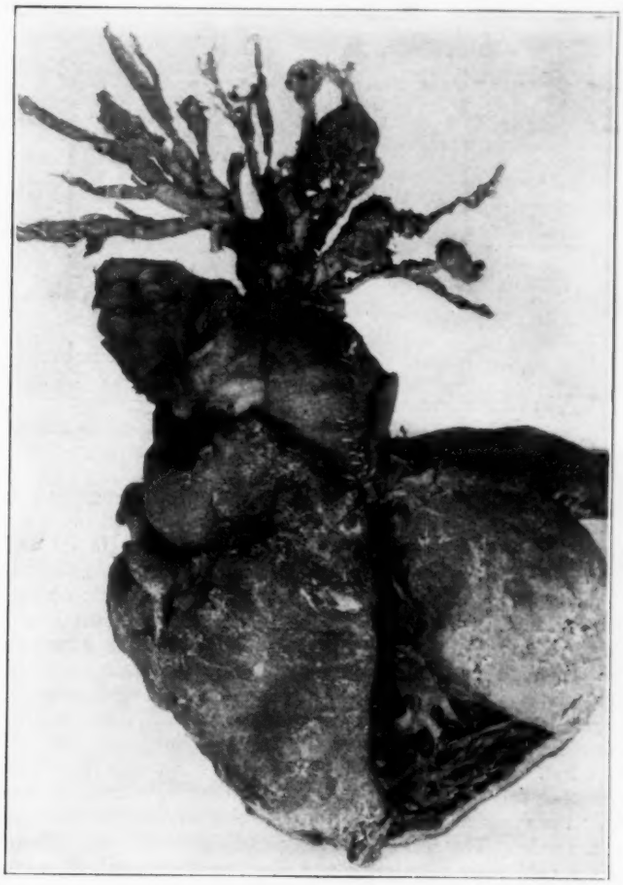

Fig. 2 (case 1).—Mycotic aneurysms in radicles of the left pulmonary artery. Mycotic aneurysms at the base of the pulmonary artery (closed by stitches).

In spite of a congenital cardiac lesion, the patient subjectively was entirely well until he had a number of teeth extracted. Signs of sepsis developed immediately and Streptococcus viridans was recovered from his blood. Embolization within the pulmonary circulation resulted in the development of multiple mycotic aneurysms. Embolization within the greater circulation was possible through the patent ductus arteriosus but apparently did not occur.

CASE 2.—*History.*—A white woman aged 35, a patient of Dr. Arthur Pearman, had rheumatic fever at the age of 4 years, with several indefinite but probable recurrences during childhood and adolescence. Tuberculous cervical adenitis developing in 1926 was successfully treated by x-rays. In 1928 therapeutic abortion was performed because of high grade mitral stenosis. In January 1937 she was under treatment for oral sepsis of a pyorrheal nature and for repair of her teeth. She had gone to the dentist feeling well. Procaine hydrochloride was injected into the gums. She returned home, experienced a chill, and her temperature reached 104 F. The chills were repeated; the fever was high and of the septic type; drenching sweats debilitated her. She became mildly icteric and obviously very ill. Her pulse ranged around 120. The blood culture yielded 260 colonies of Streptococcus viridans per cubic centimeter of blood.

The physical manifestations were those of mitral stenosis and aortic regurgitation; a tender spleen was palpable 3 cm. below the left costal margin; numerous petechiae appeared in the skin and conjunctivas, and tender finger and toe pads developed

1. Haden, R. L.: Experimental Evidence of Relation of Dental Infection to Systemic Disease, J. Kansas M. Soc. **26**: 41-47 (Feb.) 1926.

with splinter hemorrhages. The hemoglobin was 8.5 Gm.; red blood cells numbered 3,300,000 and white blood cells 16,200. Urine contained 1 plus albumin and a trace of chemical blood, and the sediment was loaded with pus cells.

The course had a duration of six months. There were frequent showers of emboli to the spleen and into the skin. A high grade of sepsis with increasing evidence of cardiac failure characterized her illness.

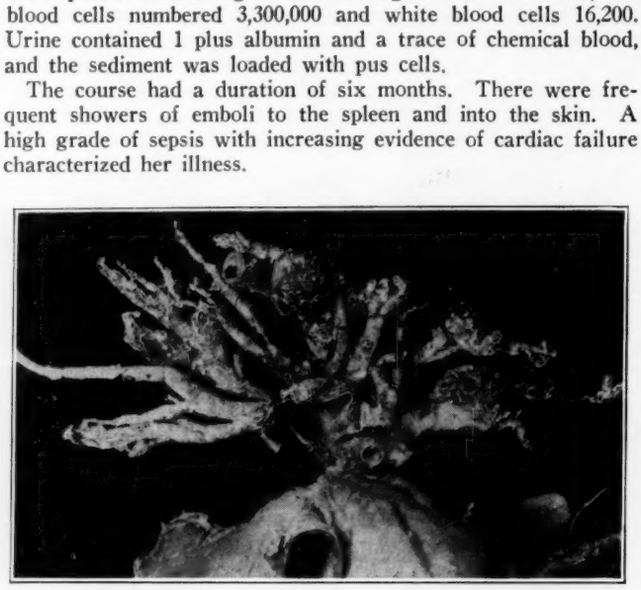

Fig. 3 (case 1).—Close view of mycotic aneurysms in the radicles of the left pulmonary artery shown in figure 2.

Necropsy.—Petechiae in the skin and mucous membranes, slight clubbing of the fingers and slight dependent edema were found on external examination. There was fluid in all the cavities. The pericardial sac was filled. It measured 20 cm. in diameter and reached the lateral wall of the chest on the left. The heart measured 12 cm. in transverse diameter and weighed 310 Gm. The left auricle was enormously enlarged, measuring 10 cm. in depth. Along the posterolateral wall of this cavity were a number of coarse thrombi and smaller vegetations varying from gray to red. The mitral valve was greatly thickened and the chordae tendineae were shortened (fig. 4). The leaflets were fused and the orifice, which was fixed and measured only 1 cm. in diameter, was closed by a fresh thrombotic mass which was continuous with older gray vegetations on the valve. The aortic valve presented similar changes. There was an old rheumatic lesion and the ventricular surfaces were studded with vegetative masses. The edges of the cusps showed moderate ulceration. The spleen weighed 480 Gm. It showed hyperplasia of the reticulo-endothelium and numerous areas of infarction in various stages of development. The kidneys weighed 320 Gm. They were gray, mottled with red streaks. Microscopically they showed multiple embolization of the glomerular capillaries. The changes in the other organs were those of sepsis and chronic congestion.

In this case, though no teeth were extracted, there is a history of very closely connected onset of sepsis with dental manipulation, including the traumatization incident to injection of procaine hydrochloride. A chill with high fever marked the onset almost immediately after the manipulation of the focus. An old rheumatic lesion furnished the "suitable soil" for implantation. Richards'[2] experiments are of interest in relation to this case. He obtained positive blood cultures in three of seventeen cases following massage of the gums. About the same percentage of his cases yielded positive blood cultures after massage of the tonsils. In two of his cases there was a chill following the massage of the tonsils. The condition is apparently comparable to catheter fever.

CASE 3.—*History.*—A girl aged 18 years, a patient of Dr. H. D. Countryman, had rheumatic fever with endocarditis at the age of 8 years. Following the acute attack she had evidence of mitral stenosis with insufficiency. At the age of 14 some teeth were removed and a dental bridge was fitted without accident. Three years later she returned to the dentist for "extensive repair work." Her health at this time was "as well as usual." Several of the teeth were devitalized and filling of the root canals was undertaken. Most of the work was done under infiltration with procaine hydrochloride. Within a few days after this dental program had been started, she complained of chills, fever, night sweats and loss of strength. She continued to keep dental appointments for a week but then found it necessary to give up. Painful finger and toe pads developed. There was a harsh systolic murmur over the mitral area, with a presystolic thrill. The murmur was transmitted to the axilla. The border of the left side of the heart was outside the midclavicular line. The spleen was palpable and tender. It reached 4 cm. below the costal margin. The hemoglobin content was 65 per cent; red blood cells numbered 3,330,000 and white blood cells 5,150. Blood cultures taken on three successive days yielded pure cultures of Streptococcus viridans. There were more than 50 colonies per cubic centimeter of blood. Cultures taken bimonthly were positive throughout the course, which lasted five months, ending fatally. The urine contained small amounts of albumin and a small number of pus cells throughout the course.

Necropsy.—The pleural and peritoneal cavities contained large amounts of fluid. The pericardial sac was obliterated by dense fibrous adhesions. The heart weighed 550 Gm. and presented marked enlargement of the left auricle and both right chambers. The mitral leaflets were thickened and fused and the chordae tendineae were thickened and shortened. Large vegetative masses were found on this valve and extended from it upward on the septal wall of the left auricle and downward over the

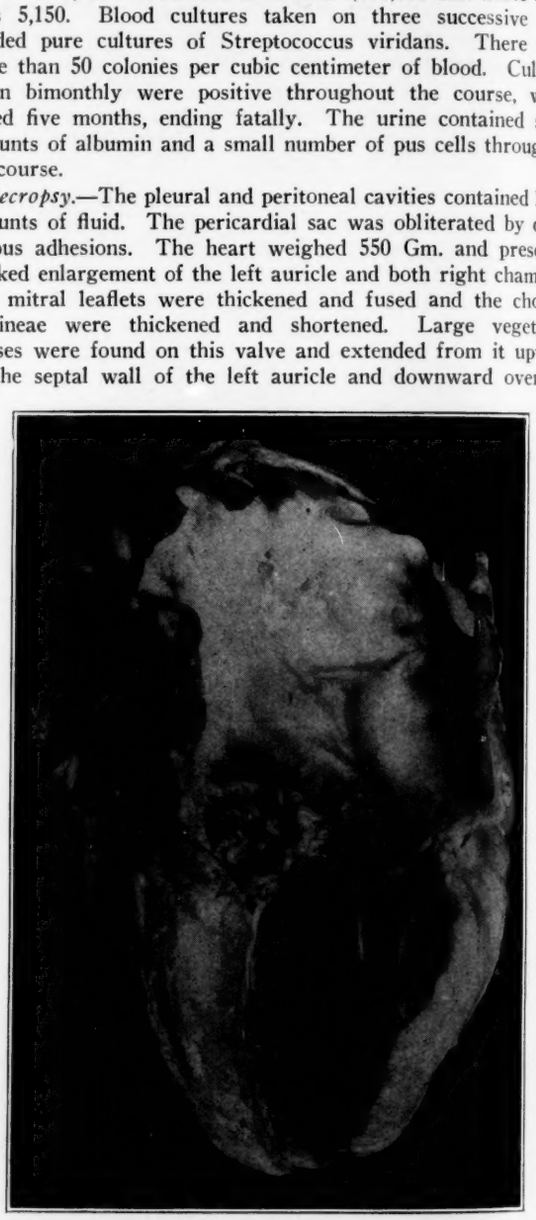

Fig. 4 (case 2).—Vegetative endocarditis engrafted on scarred mitral valve.

papillary muscles. The left coronary artery was occluded near its orifice by an embolus made up of vegetative material. Microscopically the capillaries of the kidney glomeruli contained emboli.

This child, with a healed rheumatic lesion in the mitral valve, had the onset of a septic course during the progress of extensive dental repair under local anesthesia. Death was due to coronary embolism.

2. Richards, J. H.: Bacteremia Following Irritation of Foci of Infection, J. A. M. A. **99**: 1496 (Oct. 29) 1932.

CASE 4.—*History.*—A man aged 60, a patient of Dr. Anna Weld, experienced chills and fever and was confined to his home for six weeks following the extraction of his lower teeth. Prior to this he had complained of "heart trouble," but there is no accurate description of a preexisting cardiac lesion. He had recovered sufficiently to return to work when removal of the teeth from the badly diseased upper gum area was decided on. This experience was followed immediately by chills, afternoon fever, lassitude, loss of strength, loss of weight and night sweats. Streptococcus viridans was recovered from the blood stream. There was physical evidence of a mitral lesion. The course was septic and he died within six months. Necropsy was not permitted.

The clinical history suggests that bacteremia was established following the first extractions, with possible recovery. Progressive fatal bacteremia with evidence of Streptococcus viridans endocarditis followed immediately on the massive extraction of the upper teeth.

BACTERIOLOGIC STUDY: RESULTS OF BLOOD CULTURES FOLLOWING EXTRACTION OF ONE OR TWO TEETH

In an unpublished bacteriologic study of the roots, root canals, pulp and periapical tissues of a large number of diseased deciduous teeth extracted in the Childrens Hospital in Iowa City in 1927 and 1928, we were impressed by the presence, usually in pure culture, of Streptococcus viridans in more than 90 per cent of the teeth from which cultures were taken.[3] Beta-hemolytic streptococci, staphylococci and diphtheroid bacilli were occasionally found. In this work the teeth were removed with technic as nearly aseptic as possible; the root was separated with a sterile saw and placed in 70 per cent alcohol for from three to five minutes. It was then washed with two changes of sterile physiologic solution of sodium chloride and dropped into a tube of deep meat broth (1 per cent dextrose fresh veal infusion broth with a cube of beef at the bottom of each tube, p_H 7.4). Subsequently the broth was streaked on blood agar. It has been our experience and the experience of others[4] that adult teeth, when diseased, yield the same high percentage of Streptococcus viridans.

During the past year, with Joseph A. Hopkins, D.D.S., cooperating, we have made blood cultures on eighty-two patients who had dental extractions under local anesthesia. We purposely selected patients who were not to have more than two teeth removed and made no attempt to determine whether or not there was infection in the apical areas. Okell and Elliott[5] in 1935 reported a very high percentage of positive blood cultures immediately after massive extraction of teeth from highly diseased alveoli. We were interested in learning the result of blood cultures in persons who have one or two teeth pulled for any reason. The teeth in our series were removed because they were dead, diseased beyond repair or for other reasons not related to this study. All the patients had negative cultures of blood taken immediately before operation. Fourteen of the eighty-two, or 17 per cent, gave positive cultures with blood taken immediately after the extraction. In thirteen of the fourteen positive cultures the blood was sterile ten minutes later. The other bacteremic case yielded organisms in the circulation ten minutes after the operation. The patient, a man aged 65, suffered from arteriosclerotic heart disease. He left the community soon after the extraction and passed out of our control. We learned that he had a continuous fever and died after several weeks. A necropsy was not performed. Elevation of temperature did not develop in the other thirteen cases of transient bacteremia. In eleven of the cases yielding positive blood cultures the organism was Streptococcus viridans; in two Staphylococcus aureus (hemolytic) was cultured, and in the remaining case a diphtheroid bacillus was recovered.

COMMENT

Streptococcus viridans, admitted to the blood stream by extraction of teeth, occasionally localizes in areas of the vascular system other than the heart. The following record is an example: A woman aged 59 who suffered from hypertensive heart disease had several teeth extracted. This was followed by severe occipital headache and dizziness. There was a rise in temperature, which within a week reached a level of 104 F. Coma developed and she died eight days after the extraction. A ruptured mycotic aneurysm of a sclerotic cerebellar artery was found at necropsy. Streptococcus viridans was recovered from the brain tissue.

From the oral and pharyngeal mucous membranes there are two paths by which bacteria break through the protective lining of the dental arches. Miller[6] writes: "The first is by bacterial penetration through defects in the crown of the tooth produced by caries, erosion or accident. The second break is in the epithelial covering occurring at the junction of the gum and the crown of the tooth." By the first route the pulp and periapical area become infected. The second route results in pyorrheal pockets and infection of the bone of the alveolar process; the cementum becomes exposed and in severe cases the apical area is reached. The dental pulp then becomes strangulated and infected. It is evident, therefore, that the apical area and pulp may be reached by either route. The second route probably is frequently considered important to the health of the teeth but too infrequently as a portal of entry in the pathogenesis of distant infection.

Rosenow,[4] Henry and Doyle[4] and many others have recovered streptococci from a high percentage of pulpless teeth, irrespective of whether roentgenograms were positive or negative for periapical infection. In 1926, Russell Haden[1] published a very careful study of cultures from the periapical tissue of 1,500 teeth. Streptococci were present in 92.5 per cent, staphylococci alone in only 1.3 per cent, gram-positive bacilli alone in 3.8 per cent.

Okell and Elliott[5] found that a transient Streptococcus viridans bacteremia occurred in eighty-four (60.9 per cent) of 138 patients who underwent dental extraction. In cases of severe alveolar infection, 75 per cent of the patients who underwent multiple extractions had positive blood cultures immediately after the operation. In general, these authors found that the occurrence and degree of bacteremia depended on the severity of the alveolar infection and the amount of damage done at the operation. That the bacteremia was of short duration was shown by the fact that blood cultures taken in all their cases ten minutes or more after the operation was completed remained sterile. In this series Okell and Elliott also found twelve positive blood cultures in blood taken before operation from 110

3. This work was done in the Department of Pathology and Bacteriology of the State University of Iowa College of Medicine. The department was directed by Dr. G. H. Hansmann.

4. Rosenow, E. C.: Oral Sepsis in Its Relationship to Focal Infection and Elective Localization, J. Am. Dent. A. **14:** 1417-1438 (Aug.) 1927. Henry, G. W., and Doyle, Mary C. H.: Focal Infection in Teeth, Am. J. Psychiat. **8:** 5 (March) 1929. Haden.[1]

5. Okell, C. C., and Elliott, S. D.: Bacteremia and Oral Sepsis, with Special Reference to Etiology of Subacute Bacterial Endocarditis, Lancet **2:** 869 (Oct. 19) 1935.

6. Miller, I. S.: Dental Infection and Systemic Disease, Dent. Digest **36:** 145-154 (March) 1930.

of the patients. In other words, 10.9 per cent had bacteremia irrespective of operative procedures. They speak of this as a "leak" of bacteria into the blood stream from the focus and quote Lewis and Grant as referring to an "almost physiological entry" of organisms into the blood stream of the average person.

The direct historical relation between foci in the mouth and the onset of subacute bacterial endocarditis has been stressed by some writers.[7] This group of authors report twelve cases of subacute bacterial endocarditis with onset following the extraction of teeth. Necropsies were not performed in nine of the twelve cases, and bacteriologic studies were not made in six.

Three of our four case reports are from a group of twelve cases in our necropsy records. Of the twelve, two additional cases gave suggestive histories of onset following manipulation of infected alveoli. The other records are not complete in this respect; it is necessary that the history taker be conscious of this possibility if accurate records are to be made.

Cecil [8] has reviewed the bacteriologic studies reported and has suggested clinical application of the information gained. Carr [9] has reviewed the literature. He writes "The unfavorable or harmful results following the surgical treatment of such foci, especially in connection with cardiac disease, are events of sufficient importance to impose on us the duty of caution." Evidence that the teeth and tonsils are of first importance as portals of entry for this organism has become predominant. This evidence has provoked serious thought and makes the treatment of oral sepsis in the presence of a debilitating condition, particularly a cardiac lesion, a serious problem. A more widespread understanding of the simple fact that organisms are easily disseminated from such a focus is necessary for better treatment.

SUMMARY

Seventeen per cent of a group of eighty-two patients who had not more than two teeth extracted had transient bacteremia. In 13.4 per cent the organism was Streptococcus viridans. In four cases of subacute bacterial endocarditis the onset of septic symptoms dates from the time of dental manipulation.

Bacteremia is present in an appreciable percentage of cases of severe oral sepsis independent of operation.[5] Organisms "leak" into the circulation from such foci. Traumatization of the diseased alveoli laden with Streptococcus viridans causes dispersion of these organisms through the blood stream in a high percentage of cases. The percentage is roughly parallel to the severity of the infection in the gums and to the extent of the operative procedure. This may be purely mechanical dispersion rather than invasion. In persons with a normal vascular system and a normal defense mechanism, this form of bacteremia is relatively unimportant. The circulation is usually cleared of the invaders within a few minutes.[10] Hypersusceptibility of the tissues due to long continued oral sepsis is speculated on by Cecil.[8] In persons who have preexisting rheumatic valvular lesions or congenital defects in the heart, localization of the organism on such vulnerable areas during the transient bacteremia, which so often follows dental operations, may herald the beginning of an engrafted bacterial endocarditis.

7. Bernstein, Mitchell: Subacute Endocarditis Following Extraction of Teeth (Case), Ann. Int. Med. **5**: 1138-1144 (March) 1932. Brown, H. H.: Tooth Extraction and Chronic Infective Endocarditis, Brit. M. J. **1**: 796-797 (April 30) 1932. Calvy, P. J.: Dental Surgery and Organic Heart Disease, J. A. M. A. **74**: 1221 (May 1) 1920. Vanderhoof, Douglas, and Davis, Dewey: Subacute Bacterial Endocarditis Following Extraction of Teeth with Report of Two Cases, Virginia M. Monthly **60**: 151-154 (June) 1933. von Phul, P. V.: Subacute Bacterial Endocarditis: Three Cases Following Extraction of Teeth, Northwest Med. **32**: 188-191 (May) 1933. Abrahamson, L.: Subacute Bacterial Endocarditis Following Removal of Septic Foci, Brit. M. J. **2**: 8-9 (July 4) 1931. Rushton, M. A.: Subacute Bacterial Endocarditis Following Extraction of Teeth, Guy's Hosp. Rep. **80**: 39-44 (Jan.) 1930.

8. Cecil, R. C.: The Bacteriology of Dental Infections and Its Relation to Systemic Disease, New York State J. Med. **32**: 21 (Nov. 1) 1932.

9. Carr, J. G.: Relationship Between Dental and Cardiovascular Disease, J. Am. Dent. A. **24**: 1979-1988 (Dec.) 1937.

A CLINICAL STUDY OF ACNE IN UNIVERSITY STUDENTS

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The etiology of acne remains obscure in spite of the investigative opportunity afforded by the high incidence of this disease. It has been studied from the point of view of specific infection, focal infection, allergy and disturbed metabolism of carbohydrates, fats and halogens, but none of these factors have been accepted as a specific etiologic agent. Recent interest has been directed toward a relation with the endocrine system, suggested by the onset of acne at puberty and its usual disappearance with sexual maturation, the frequent exacerbation with the menses and its reported absence in eunuchs.

A number of observers have demonstrated abnormal amounts of estrogenic or androgenic principles in the blood or urine of patients with acne. Although these studies suggest a relationship between acne and the endocrine system, the individual variations are considerable and there must be some doubt as to the significance of averages among groups of patients when there is so little uniformity within each group. These apparent hormonal deficiencies can as yet be regarded only as associated with acne rather than as a demonstrated cause of the disease. Particularly disappointing are the relatively poor results of treatment of acne with estrogen or androgen.

It is the opinion of many that acne is often accompanied by clinical evidence of endocrine disease, and this association is regarded as etiologically significant. It has also been said that acne is frequently accompanied by menstrual irregularity, but no one has recorded sufficient clinical evidence to prove a causal relationship.

In order to determine how frequently acne is associated with other clinical phenomena, observations were made on three groups of students at the University of Minnesota. Routine physical examination of students at the time of their registration in the university provides a large amount of general data, but there is a lack of detailed information as to the condition of the hair and skin; the presence or absence of acne is recorded by the staff physicians but its character, severity and extent are not accurately described. In the first and largest group of students, these data were analyzed to determine the relation between acne and the character of the menses in 3,119 cases and the relation to the form of the body and the weight in 4,235 cases.

10. Progressive septicemia due to highly virulent organisms is an occasional accident following dental operations but is not considered in this paper.

From the Student Health Service, Dr. Ruth Boynton, Director, and the Division of Dermatology, Dr. H. E. Michelson, Director, University of Minnesota.

Read before the Section on Dermatology and Syphilology at the Ninetieth Annual Session of the American Medical Association, St. Louis, May 17, 1939.

In the second group were 481 consecutive new students subjected to more careful dermatologic examination. Their records were reviewed for additional diagnoses resulting from the general examination as well as for the weight and form of the body and the character of the menses. They were questioned as to their habits of facial and scalp hygiene and the frequency of bowel movement. In each case the scalp was examined for evidence of seborrhea and the face and trunk were observed for acne. Although no attempt was made to count the individual lesions, the acne was graded as mild, moderately severe or severe. The duration, extent and distribution of the eruption were also recorded. The color and texture of the hair were similarly classified by practical rather than scientific standards.

In the third group were students who came to the health service for treatment. Of these patients, 251 were studied in the same manner as those in group 2. For an additional 120 students applying for treatment the basal metabolic rate was determined, and they were carefully questioned as to the character of the menses and the course of their eruption. Repeated changes in the length of the menstrual cycle were regarded as significant if there was a variation of more than three days from the accepted average of twenty-eight days. Since there is considerable doubt as to the endocrine influence in dysmenorrhea, this symptom was reviewed separately and was disregarded unless it required going to bed each month. A menstrual flow having a duration of three days or less was regarded as significant oligorrhea.

INCIDENCE OF ACNE

The incidence of acne as recorded on the routine examination was of little value because of the large number of examiners and the tendency for minor degrees of the disease to be ignored by some of the physicians. Among the 481 students undergoing the special examination on admission, the boys were subject to the disease more often than the girls and the severity of their eruption was considerably greater. This increased incidence was observed at each age level from 17 to 21 years.

TABLE 1.—*Incidence of Acne Among 481 Students*

	No Acne, per Cent	Acne, per Cent		
		1+	2+	3+
Boys (229)	43	29	24	4
Girls (252)	54	31	14	1

Since all these patients were university students, the incidence at various ages does not give a true picture of the course of acne. The median age of the boys was 19 and of the girls 18 years. The fact that the median age in the severe cases was no higher than that in the mild ones suggests but does not prove that severity is not related to the duration of the disease. The higher incidence among boys may be due only to the age of the group; acne develops at a later age in boys than in girls.

CHARACTER OF THE ERUPTION

A greater severity of involvement among the boys was further demonstrated by the character and distribution of the eruption. Pustular forms of acne were more common among boys, while papular eruptions were present equally in the two sexes.

In a group of 277 boys and 219 girls the trunk was involved much more often among the boys, but in both sexes the face was the most common site, with the back next and the chest least often involved.

COURSE OF THE DISEASE

It was found that the course of acne was seldom regular and that irregularity was about equally common to boys and girls. In most cases having an irregular course, the exacerbations were associated with the menses. Abnormal menses were twice as common among girls having such a premenstrual flare-up.

RELATION TO BODY BUILD

In a group of 4,235 boys and girls whose body build was classified as hypersthenic, sthenic or asthenic there

TABLE 2.—*Relation of Acne to Body Build Among 4,235 Students*

		Without Acne, per Cent	With Acne, per Cent
Boys	Hypersthenic	8	9
	Sthenic	86	84
	Asthenic	6	7
Girls	Hypersthenic	10	12
	Sthenic	52	56
	Asthenic	38	32

was no relation between the form of the body and the presence of acne. The boys showed fewer variations from the sthenic build than did the girls.

For the group of 666 students examined more carefully, similar observations were recorded. The only statistically significant variation was the observation that asthenic girls are unlikely to suffer from severe forms of acne.

The classification of body build as hypersthenic, sthenic or asthenic is admittedly not the most satisfactory from an endocrine standpoint, but it was thought that significant endocrine abnormalities might become evident because of the large number of students examined. Since there is no doubt that variations in endocrine function may affect the form of the body, probably in relation to the thyroid, pituitary, adrenal and gonadal secretory activity, it may be worth while to review another group of patients following more accurate morphologic classification such as has recently been established for girls.[1]

RELATION TO BODY WEIGHT

Deviation from normal standards of weight are occasionally but not always an indication of endocrinopathy. In these records a variation from standard averages greater than plus or minus 10 per cent was regarded as abnormal. In neither series of students were significant differences noted with reference to the presence or the severity of acne. (Regardless of the presence or absence of acne, girls were likely to weigh less and boys more than the "normal" figures.)

BASAL METABOLIC RATE

Of the methods used for determining endocrine abnormality, the metabolism test is the only one which allows accurate comparison of the results with accepted standards. This test is chiefly a measurement of the activity of the thyroid gland but abnormal rates may also result from disease in other glands.

It is well known to students of metabolism that girls utilize less energy than boys. This difference is taken

1. Bayer, Leona M.: Build in Relation to Menstrual Disorders and Obesity, Endocrinology **24**: 260 (Feb.) 1939.

into account in the establishment of normal standards of metabolic rate as expressed in percentages. Thus, although ±0 per cent represents a lower level of metabolic activity in girls than in boys, the figure is in each case the normal or average for other persons of the same sex, age and body area. This point is emphasized because in a series of forty-three boys and seventy-seven girls with acne the average basal metabolic rate of the girls was significantly lower than that of the boys. Rates deviating from the normal by more than ±10 per cent were equally numerous in the two sexes, but in the girls more of the abnormal rates were low and

TABLE 3.—*Relation of Acne to Body Build Among 666 Carefully Examined Students*

		Without Acne, per Cent	With Acne, per Cent		
			1+	2+	3+
Boys	Hypersthenic	7	4	7	8
	Sthenic	86	89	82	81
	Asthenic	7	7	11	11
Girls	Hypersthenic	10	9	9	9
	Sthenic	78	68	87	91
	Asthenic	12	23	4	0

in the boys more were high. When the patients were not classified by sex, those having plus rates were equal in number to those having minus rates.

In boys or girls plus rates were twice as common among those having involvement of the trunk as among those whose acne was limited to the face. When the eruptions were graded as to severity but not extent, the records suggested that higher rates were found in the more severe cases among both boys and girls, but statistical methods of analysis failed to demonstrate that this apparent trend was significant. A larger series might clarify this point.

RELATION TO THE MENSES

One of the best clinical means of estimating the normality of endocrine function is the menstrual history. Since the patient's statement of character of the menses is usually accepted by the physician, it is unfortunate that such histories are not dependable. It has been shown in college students that at least one third have only an inaccurate knowledge of their menstrual cycle.[2] Thus it is obvious that no menstrual history or group of histories can provide conclusive evidence unless the patients have kept written records.

Since any significant difference might become evident because of the large number of persons studied, these data based on routine questioning of 1,214 girls with acne and 1,905 without acne are reported, even though probably inaccurate. Analysis of the percentage of subjects with each type of menstrual difficulty showed striking agreement in the two groups. Thirteen per cent gave a history of irregularity, menorrhagia or amenorrhea, and an additional 4 per cent in each group suffered from severe dysmenorrhea. Further subdivision of these students according to age did not significantly change the proportions, perhaps because only a relatively small number were over 21 years of age (8 per cent of those with acne and 11 per cent of those without). A similar lack of relation to the menses was also noted by Cunningham and Lunsford.[3]

Eighty girls with acne were questioned in greater detail and among them the apparent incidence of abnormal menses was considerably higher (40 per cent). This figure is in agreement with the statements of many writers but it is not known whether this represents a significant difference from girls without acne. The facts could be obtained only by requiring a larger group to keep a written record for at least six months. In this smaller series of girls, the incidence of abnormal menses was apparently greater as the severity of the acne increased.

TEXTURE AND COLOR OF THE HAIR

Texture of the hair was investigated because it was thought that the size of the hair follicles would be likely to influence the tendency to acne. Fine hair was much more common than coarse hair in the entire group. It was noted that severe acne was slightly less common in girls with fine hair, but statistical methods indicated that the amount of variation was probably not significant.

There was no relation between the color of the hair and the presence of acne. In Sallenbach-Keller's series[4] there was an increased incidence of acne among those with darker hair, but Cunningham and Lunsford[3] in records of the complexion found that brunettes had a slightly better chance of escaping acne.

ASSOCIATION WITH SEBORRHEA, HYGIENE, CONSTIPATION AND FOCI OF INFECTION

Boys were noted to have seborrhea more often than girls. In both sexes seborrhea was more common among those with acne and the incidence increased with the severity of the acne.

The results of inquiry as to the frequency of washing the face indicated that girls without acne wash less frequently, as had been noted by Hinrichsen and Ivy.[5] This lack of attention is perhaps a natural result of lack of need for attention. Among the boys there was no association between the incidence of acne and the frequency of washing.

The incidence of constipation was negligible in both sexes whether or not acne was present.

TABLE 4.—*Basal Metabolic Rates of Forty-Three Boys and Seventy-Seven Girls*

	Boys	Girls*
Lower than −10%	6	16
−1 to −10%	11	26
	17 (40%)	42 (58%)
+1 to +10%	18	21
Higher than +10%	8	10
	26 (60%)	31 (42%)

* A result of ±0% was reported for two girls.

A wide variety of additional diagnoses was recorded but the only condition which appeared to have any significance was focal infection of the nose or throat, which was much more common in boys than girls. It is possible that this infection is related to the increased incidence of papular and particularly pustular lesions in boys as compared with girls.

THERAPY

The age of onset and the course of acne suggest that this disease is related to the endocrine system, and chemical determinations of estrogen and androgen in

2. Boynton, Ruth, and Treloar, A.: Personal communication to the author.

3. Cunningham, R. L., and Lunsford, C. J.: Acne: A Statistical Study of Possible Related Causes, California & West. Med. **35**: 22 (July) 1931.

4. Sallenbach-Keller, Lily: Akne Vulgaris und Pubertät: Inaugural Dissertation, Zurich, 1930.

5. Hinrichsen, Josephine, and Ivy, A. C.: Incidence in the Chicago Region of Acne Vulgaris, Arch. Dermat. & Syph. **37**: 975 (June) 1938.

the urine or blood indicate that there may be some association with the gonadal secretions, but the results of endocrine therapy of acne have not been satisfactory. The administration of thyroid substance, estrogen, androgen or the sex-stimulating principle of the pituitary gland may in selected cases result in considerable improvement, but there are many failures after the routine use of such preparations. There are obvious objections to giving active hormonal therapy to a group of adolescents having no gross evidence of endocrine disease; in particular the prolonged use of estrone or testosterone might easily have an undesirable inhibitory action on the pituitary gland. In order to avoid some of the objections to injection therapy and yet to give the estrogenic agents another trial, a series of patients was treated by use of a cream containing a modified estrogen. The cutaneous application of estrogen is known to be followed by a systemic effect and also by a local action on the epithelial structures.

A series of forty-nine girls with acne were treated by the external use of the dihyro form of estrogen. Improvement was noted in 72 per cent of these patients, a proportion which would suggest that this is a therapeutic method of value; but the validity of this conclusion is questioned after observation of similar improvement in 64 per cent of girls in a control series who used the same ointment base without estrogen. This lack of response to local estrogenic therapy and the relatively unsatisfactory results of estrogenic and androgenic injections are disappointing to one who seeks to link acne and the secretory organs.[6]

COMMENT

The purpose of this study was to search for clinical evidence relating acne and endocrine imbalance, an association suggested particularly by the age of onset and the course of acne. The microscopic pathology, the clinical appearance of the eruption and the results of treatment give little evidence to prove or disprove such a relationship. Chemical and biologic studies of the urine and blood show some variations in hormone content but do not prove that acne is an endocrine disease.

A number of observers have made statements which, if true, would be further evidence for associating the endocrine glands and acne. For example, it has been said that acne does not occur in persons with alopecia, a statement with which I cannot agree. Others have said that acne always disappears with marriage, but there are numerous exceptions to this rule. Riley[7] stated that irregular sex practices possibly cause acne persisting after marriage.

Several serious attempts have been made to correlate acne and other clinical symptoms,[8] but none of them have been very successful. Sallenbach-Keller established a relationship between the onset of acne and the appearance of the menses, and Cunningham's evidence suggests an association with enlargement of the thyroid gland. Numerous writers have commented on the incidence of irregular menses in about a third of girls having acne but have not shown that this rate is significantly higher than normal.

In my series of 3,119 girls the incidence of abnormal menses was not related to the presence or absence of acne. Although girls with severe acne had a greater tendency to abnormality of menstruation, it is not unlikely that the incidence of abnormal menses is higher when associated with severe examples of any disease whether or not the disease is endocrine. Abnormal menses were twice as common among girls having a premenstrual flare-up.

The records of 4,235 university students did not show any significant association between acne and the weight or form of the body except that asthenic girls may perhaps be less likely to suffer from severe forms of acne. This is obviously not an observation on which extensive conclusions can be based.

Girls with acne were found to have lower metabolic rates than boys with the disease. Higher metabolic rates were recorded for both sexes when the eruption was extensive. These observations are probably significant but I am unable to explain them.

Study of the color and texture of the hair failed to indicate any association with acne.

Seborrhea, more severe involvement with acne, more extensive eruptions and a pustular tendency were observed more commonly in the boys, but these features have no evident association with endocrine disease.

SUMMARY

As a result of this review I am unable to point out any clinical evidence which might aid in establishing an etiologic relationship between acne and endocrine imbalance. There appears to be a relationship to abnormal thyroid function, but this is demonstrable only by changes in the basal metabolic rate and is not a clinical observation. In severe cases of acne there is some association with menstrual irregularity but in milder cases this association is not evident. With reference to acne of a mild or moderate degree, it is hardly possible to say more than that it accompanies the process of puberty and sexual maturation.

350 St. Peter Street.

ABSTRACT OF DISCUSSION

DR. J. G. HOPKINS, New York: Dr. Lynch's collecting and analyzing of this great body of data puts us all in his debt. We now have some facts to study and from these some of us may draw different conclusions. The outstanding thing seems the age incidence, 47 per cent in girls and 51 per cent in boys, wasn't it, in a group of the mental age of a college freshman? I suppose that would be a calendar age of about 18.

DR. LYNCH: The age was 19 in the males and females.

DR. HOPKINS: Well, at that age Bloch reported even higher percentages, which may be due to the different populations sampled or to a different interpretation of what are the lower limits of acne. Both reports lead to the conclusion that at that age the person with acne is the normal; the person without acne is the abnormal. Now the fact that it is in a sense a normal occurrence at the time of arrival at sexual maturity or shortly thereafter does not, of course, prove that it is of endocrine origin, but it seems to me strongly suggestive of an essential endocrine basis. In his data one other thing stood out confirming the general belief that an exacerbation, by which we probably mean a development of pustules, occurs quite regularly with the menstrual period. I think it is hard to dodge the implication that that means endocrine action. As to this we have more direct evidence in reported studies on excretion of estrogen in these patients. While the observations of Kurzrok and Rosenthal of a complete absence of excreted estrogen in the majority of acne patients have not been confirmed, I don't think they have been controverted and subsequent reports of similar studies have pointed somewhat in the same direction. These interesting data give us much to think about and analyze. I think it is possible to draw slightly different conclusions from those which Dr. Lynch presented.

6. The result of treatment of these patients is reported in greater detail in a brief paper (Arch. Dermat. & Syph., to be published). The material was provided by Dr. Gregory Stragnell, Schering Corporation, Bloomfield, N. J.

7. Riley, Ian D.: Testosterone Propionate in Acne Vulgaris, Brit. J. Dermat. **51**: 119 (March) 1939.

8. Cunningham and Lunsford.[3] Sallenbach-Keller.[4] Hinrichsen and Ivy.[5]

DR. R. L. SUTTON JR., Kansas City, Mo.: My interest in acne is the practitioner's problem of curing the patient. I offer a hypothesis about its etiology. Bloch wrote: "Only the comedo [first] phase of acne can be brought into direct relationship with endocrine processes. The second phase is characterized by an inflammatory process on the basis of infection. It may follow the first, but this is not inevitable." If the inflammatory phase were the result of infection with Corynebacterium acnes, said to be present invariably, the second phase ought to be inevitable. It is not, and I believe that the saprophyte has been unjustly maligned. Bloch assumed that inflammation implies infection, overlooking the fact that the inflammatory phase of acne is foreign body reaction to lipoid. It is a tuberculoid reaction which has caused pathologists to confuse acne with tuberculosis. It results from the introduction of lipoid into mesodermal tissues and has nothing to do with parasitism. It may result from bruising a comedo or from injecting lipoidal material into the skin as Sabin injected fractions of Mycobacterium tuberculosis. Hass injected fatty acids of olive oil and cod liver oil and learned that less saturated fatty acids are more irritating. A comedo once formed, like a xanthomatous deposit, cannot be resorbed easily. Its resorption requires an inflammatory lesion. Phagocytism perhaps is instigated by discontinuity of the epithelial barrier separating comedo from mesoderm. Trauma can cause the breach. Foreign body reaction may take place shallow or deep, and phagocytes may attack either solid, well saturated lipoid or liquid, less saturated material. The clinical picture varies with the location and severity of the inflammatory process. Acne vulgaris I define as the disease which consists of tuberculoid inflammatory reaction to sebum which is abnormal because of improper metabolism of lipoid. Acne is a kind of pustular lipoidosis. In contrast with primarily mesodermal lipoidoses (xanthomatoses), acne is primarily epidermal lipoidosis with secondary inflammation. Acne depends on excessive ingestion of oil: milk, cream, ice cream and butter are chief offenders; so are pork and cod liver oil. Girls get acne when they try to gain weight by drinking milk and taking cod liver oil. Acne depends on hormonal influences through the interrelationship of thyroid function and lipoid metabolism. Lipemia designates hypothyroidism more dependably, Hurxthal proved, than basal metabolic rate determinations. Vitamin A is concerned, for its excess counteracts the patient's autogenous supply of thyroxine. When one's intake of lipoid and vitamin A exceeds one's ability to metabolize them, one may develop deposits in the sebaceous glands, to which may develop inflammatory reactions. Treatment based on this etiologic interpretation works in practice.

DR. J. D. FARRIS, Richmond, Ky.: Dr. Lynch's paper is particularly interesting to me because as a college physician in a state college I deal with this age group of young people and the sexes are about equally divided. I wish to corroborate the many points that he brought out in this particular subject and wish to state that I have found many of the same points to be true in the examinations of several thousand boys and girls over the last few years. He mentioned using estrogenic substance in the paste or ointment and I wonder what his experience has been in using it hypodermically, or some product such as antuitrin-S. I myself have had some rather good results in these cases, quite satisfactory to the young people, by injections of these substances.

DR. FRANCIS W. LYNCH, St. Paul: I have no report on the results of treatment by the injection of estrogenic agents because I have not felt justified in administering such treatment as a routine to these students. Dr. B. A. Watson of the student health service has been in communication with Dr. Sutton and we have been stimulated by Dr. Sutton's theory as to the pathogenesis of acne. A boy with a severe, chronic, papular and pustular acne involving the face and trunk was placed on a measured and weighed diet for two months, part of the time with low, normal and high fat content. With these diets we failed to note any influence on the blood cholesterol level or any significant association with the course of the eruption. At one period the eruption improved noticeably while the diet was high in fat content. This one case is reported not as conclusive evidence but merely as a single experiment. I hope that Dr. Sutton will report on a series of patients treated according to his suggestions. Dr. D. W. Cowan at the health service has recently performed vitamin C determinations in the blood of several hundred students. In reviewing the results of these studies, he failed to observe any association between the vitamin C level and the presence or absence of acne. I did not acquire this information in time to include it in my report but thought that it might be of interest to the members of the section, particularly because of the relationship between vitamin C and the adrenal glands and the possibility that the amount of vitamin C in the blood may be some indication of the functional activity of the adrenal glands. I agree with Dr. Hopkins that there are many reasons for assuming a relationship between acne and the endocrine system. I should have made clear that the conclusions I presented today are based only on the studies and material of this report and are to be regarded as only one portion of the evidence which must be reviewed in making a final judgment of the cause of acne.

SMALLPOX VACCINATION OF INFANTS

REVACCINATIONS AFTER TWO TO THREE YEARS IN CHILDREN PRIMARILY VACCINATED WITH CULTURE VIRUS (RIVERS), COMPARED WITH THOSE PRIMARILY VACCINATED WITH CALF LYMPH VIRUS

HARRY H. DONNALLY, M.D.

WASHINGTON, D. C.

Revaccinations of children from 2 to 3 years of age, among those who had been vaccinated[1] in 1935 and 1936 in the newborn nurseries of Gallinger Municipal Hospital within a few days of their birth, were done in June and July 1938. The total number of these revaccinated children followed through to involution of the skin reactions numbered seventy, almost exactly half of whom (thirty-six) had had successful primary takes at birth with culture vaccine virus (Rivers)

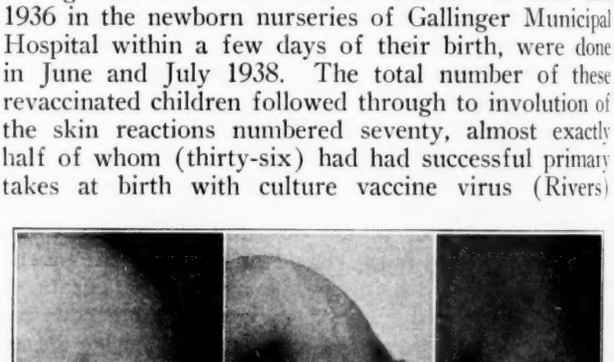

Fig. 1.—Primary vaccination when child was 3 hours old. Culture virus (Rivers) M60, intradermally; unsuccessful. June 22, 1938; no scar. Revaccination when child was 2 years 8 months old. New York calf lymph; thirty needle pressures cutaneously. Early appearance of skin reaction: Present within twenty hours. Rapidity of vaccinal cycle: Not increased; eighth day at or near peak. Intensity of skin reaction: Large take. Estimate of immunity: None. *A*, third day; *B*, fifth day; *C*, eighth day.

inoculated intradermally, and the other half (thirty-four) had had successful takes at birth with calf lymph virus, two thirds (twenty-three) by the intradermal

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1. Donnally, H. H.; Nicholson, M. M.; Anderson, W. S., and Grosvenor, M. H.: Intradermal Vaccination of Newborn with Culture Virus (Rivers) Compared with Intradermal Vaccination with Diluted Calf Lymph in Over 1,000 Babies, to be published.

method and the other third (eleven) by the cutaneous method (Leake's [2] multiple pressures). The skin reactions were essentially the same whether the intradermal vaccination had been performed with culture virus (Rivers) or diluted calf lymph virus (New York Bureau of Laboratories) but tended to appear earlier with calf lymph. Each of these viruses could give marked variation in intensity of skin reaction in different babies.

The scars of these primary takes were readily found because newborn infants were vaccinated uniformly on the outside of the left leg just below the head of the fibula. In the culture virus takes the scars were absent in 35.1 per cent and not over 5 mm. in diameter in 32.4 per cent, whereas in the primary calf lymph takes there were scars in excess of 10 mm. in diameter in 62 per cent, and no visible scar in one child (3 per cent). Intradermal inoculations of diluted calf lymph virus, 1 part in 100 of 0.85 per cent sodium chloride solution gave as a rule a smaller skin reaction and a smaller scar than the cutaneous multiple pressure. The percentage of successes was 93 per cent, the same whether the calf lymph was inoculated intradermally or cutaneously (table 1).

TABLE 1.—*Size of Primary Scars*

Virus Used in Primary Vaccination	Total Cases (71)	No Record of Scar	No Visible Scar	2 Mm. or Less	2 Plus to 5 Mm.	5 Plus to 10 Mm.	10 Plus to 20 Mm.	Over 20 Mm.
Culture virus (Rivers) intradermal	37	3 (8.1%)	13 (35.1%)	6 (16.2%)	6 (16.2%)	6 (16.2%)	3 (8.1%)	0
Calf lymph virus	34	0	1 (3%)	0	4 (11.8%)	8 (23.5%)	11 (32.4%)	10 (29.4%)
Intradermal	23		1		4	8	10	0
Cutaneous	11		0		0	0	1	10

Sizes of scars resulting from successful intradermal vaccinations with culture virus (Rivers) at birth, after two to three years: no scars in 35 per cent, and in the remainder small scars. Calf lymph virus scars resulting from successful intradermal or cutaneous vaccinations at birth, showed no scar in 3 per cent, and scars over 10 mm. in diameter in 62 per cent.

In a former publication [3] in discussing the duration [3a] of immunity to vaccination and to smallpox, the following statement occurs summarizing facts [4] which relate to the subject: "Skin reaction to revaccination indicates the individual's degree of protection; in the early months following first vaccination he may be completely insusceptible; he may show varying alterations in skin reactivity, particularly after the first vaccination, the early appearance of these, the rapidity of the cycle, and the intensity of the skin reaction being indications of his state of immunity. The strength of smallpox protection is closely related to that of skin protection to revaccination; complete immunity or insusceptibility to revaccination is a temporary state." In each revaccination of the seventy children, a record was made when possible with regard to the early appearance, the rapidity of the vaccinal cycle and the intensity of the skin reaction. With these data an attempt was made to make an appraisal of the degree of immunity present in each of the children.

TABLE 2.—*Early Appearance of Skin Reactions*

Virus Used in Primary Vaccination	Observed Later in Day and on Following Day	Total Number of Early Reactions
Culture virus (Rivers) intradermal	18	18 (100%)
Calf lymph virus	19	19 (100%)
Intradermal	13	13
Cutaneous	6	6
Primary takes with calf lymph in newborn, cutaneous	19	0
Incubation: Two days	4	
Three days	11	
Four days	4	

Early appearance of skin reaction was present in all of the two groups, those primarily vaccinated with culture virus and those primarily vaccinated with calf lymph virus, the skin reaction appearing within twenty-four hours.

A control group of twelve children of similar age who had never been successfully vaccinated before were vaccinated in the same manner, at the same time and with the same batch of calf lymph virus.

VIRUS USED AND METHOD OF REVACCINATION

A fresh lot of calf lymph virus was obtained from the Bureau of Laboratories of the Department of Health of New York when we were ready to start the revaccinations. This was carefully protected in transit and while in our hands by keeping at low temperatures until actually used. Both groups, (1) the children primarily vaccinated with culture virus (Rivers) and (2) those primarily vaccinated with calf lymph virus (New York Bureau of Laboratories), either by multiple pressure and rubbing or by intradermal inoculation of diluted calf lymph, were revaccinated vigorously by thirty multiple pressures with the needle through

TABLE 3.—*Rapidity of Vaccinal Cycle*

Virus Used in Primary Vaccination	Total Cases (71)	Vaccinal Cycle Accelerated	Vaccinal Cycle Not Accelerated	Unknown
Culture virus (Rivers) intradermal	37	17 (46%)	19 (51.4%)	1 (2.7%)
Calf lymph virus	34	29 (85.3%)	5 (14.7%)	0
Intradermal	23	19	4	
Cutaneous	11	10	1	

Children primarily successfully vaccinated intradermally at birth with culture virus (Rivers) showed on revaccination with calf lymph cutaneously after two to three years no acceleration of the vaccinal cycle in nineteen (51.4 per cent) of thirty-six revaccinations. Children primarily successfully vaccinated intradermally or cutaneously at birth with calf lymph virus showed on revaccination with calf lymph virus cutaneously after two to three years acceleration of the vaccinal cycle in twenty-nine (85.3 per cent) of thirty-four children.

2. Leake, J. P.: Questions and Answers on Smallpox and Vaccination, Pub. Health Rep. **42**: 221 (Jan. 28) 1927.

3. Donnally, H. H., and Nicholson, M. M.: A Study of Vaccination in Five Hundred Newborn Infants, J. A. M. A. **103**: 1269-1275 (Oct. 27) 1934.

3a. Rivers, Ward and Baird (Amount and Duration of Immunity Induced by Intradermal Inoculation of Cultured Vaccine Virus, J. Exper. Med. **69**: 857 [June] 1939) state: "It is known that infants shortly after birth (Donnally, H. H., and Nicholson, Margaret M.: A Study of Vaccination in 500 Newborn Infants, J. A. M. A. **103**: 1269 [Oct. 27] 1934) are somewhat resistant to infection with vaccine virus. Furthermore, it has been demonstrated (Donnally and Nicholson, loc. cit.) that such infants after a successful vaccination rapidly lose their immunity, many being fully susceptible a year later." Our conclusion was contrary to this. The completely immune are two and one-fourth times the number of nonimmune, as reported in 1934 for revaccinations of fifty-two infants from thirteen to sixteen months after successful vaccination at birth. Rivers, Ward and Baird state also that reports in the literature concerning the duration of immunity in children to vaccine virus are conflicting. This we have found to be true. Sergent and Trensz (De la perte d'immunité vaccinale, Bull. Acad. de méd., Paris **107**: 625, 1932) state that the anti-smallpox vaccine prepared at the Institut Pasteur d'Algérie, which gives 100 per cent positive results with primary vaccinations on the newborn, gave the results presented below on persons previously successfully vaccinated and followed:

Age	Revaccinations	Reactions of the Primary Type	Percent of Reactions of the Primary Type
From 2 to 10 years	1,947	1,243	63%
From 11 to 20 years	946	539	56%

The detailed tables of these writers show that the proportion of successful revaccinations does not vary significantly from childhood to the age of 20 years.

4. Pirquet, Clemens: Klinische Studien über Vakzination und vakzinale Allergie, Leipzig and Vienna, 1907.

a drop of calf lymph on the skin, followed in each instance by moderate rubbing with the shaft of the needle and with the identical batch of virus. The plan was to use a "hot virus" and a severe technic of vaccination to insure uniformly a high percentage of takes. Thirty-eight revaccinated children were admitted

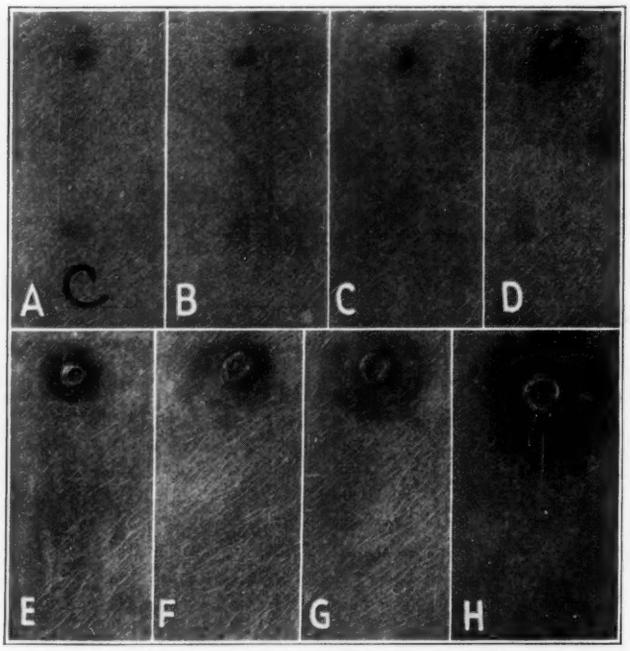

Fig. 2.—Primary vaccination when child was 23 hours old. Culture virus (Rivers) M54, intradermally; successful. Culture mediums unseeded as control. *A*, second day; *B*, third day; *C*, fourth day; *D*, fifth day; *E*, sixth day; *F*, seventh day; *G*, eighth day; *H*, ninth day.

immediately to the Children's Hospital, Washington, D. C., for observation during five days. Of the children admitted to the hospital, eighteen had been primarily inoculated successfully with culture virus,

TABLE 4.—*Intensity of Skin Reactions*

Virus Used in Primary Vaccination	No. of Cases (71)	Greater Than Primary	Similar to Primary	Less Than Primary	Unknown
Culture virus (Rivers) intradermal	37	34 (92%)	2 (5.4%)	0	1 (2.7%)
Calf lymph virus	34	5 (14.7%)	2 (6%)	27 (79.4%)	0
Intradermal	23	5	2	16	0
Cutaneous	11	0	0	11	0

Intensity of skin reaction on revaccination: Thirty-seven children successfully vaccinated at birth with culture virus (Rivers) intradermally showed on revaccination with calf lymph virus cutaneously greater intensity of skin reaction in thirty-four (92 per cent). Thirty-four children successfully vaccinated at birth with calf lymph virus intradermally or cutaneously showed on revaccination with calf lymph virus cutaneously greater intensity of skin reaction in five (14.7 per cent) and less intensity of skin reaction in twenty-seven (79.4 per cent).

nineteen successfully with calf lymph virus, and one unsuccessfully with culture virus. Their temperatures were taken regularly. The skin reaction was observed and recorded from three to five hours after inoculation, from eighteen to twenty hours after and from twenty-eight to thirty hours after. They were observed daily for the next three days during their stay in the Children's Hospital. They were then discharged as inpatients to report in the outpatient department until involution of the skin reaction. Photographs of the skin reactions were made in each child on the third day (forty-eight hours) after inoculation, the fifth day and the eighth day after and occasionally later. Records of the sizes of the papilla, redness, crusting, areola and adenopathy were also made.

EARLY APPEARANCE OF SKIN REACTIONS

In every instance among the children previously inoculated successfully with culture virus or with calf lymph virus, the skin reaction (table 2) appeared by

TABLE 5.—*Estimate of Immunity as Disclosed by Severe Cutaneous Revaccination*

(New York Bureau of Laboratories, calf lymph, thirty needle pressures cutaneously)

Virus Used in Primary Vaccination	No. of Cases (70)	Slight or None	Fair	Good	Immune Reaction
Culture virus (Rivers) intradermal	36	29 (80.5%)	5 (14%)	2 (5.5%)	0
Calf lymph virus	34	7 (20.6%)	2 (6%)	14 (41.2%)	11 (32.3%)
Intradermal	23	6	2	10	5
Cutaneous	11	1	0	4	6

Estimate of immunity: Among thirty-six children successfully vaccinated intradermally at birth with culture virus (Rivers), revaccination after two to three years with calf lymph virus cutaneously showed twenty-nine (80.5 per cent) to have apparently slight or no immunity and five (14 per cent) apparently to have fair and two (5.5 per cent) good immunity. Among thirty-four children successfully vaccinated intradermally or cutaneously at birth with calf lymph virus, revaccination after two to three years with calf lymph virus cutaneously showed seven (20.6 per cent) to have apparently slight or no immunity and 73.5 per cent apparently to have good immunity.

the following day. In one child, unsuccessfully vaccinated at birth with culture virus, there was an identical early appearance of the skin reaction. The incubation period in nineteen consecutive newborn vaccinations were as follows: two days, four babies; three days, eleven babies; four days, four babies. This is an unsatisfactory control group because in the previous study [3] it was emphasized that newborn infants were

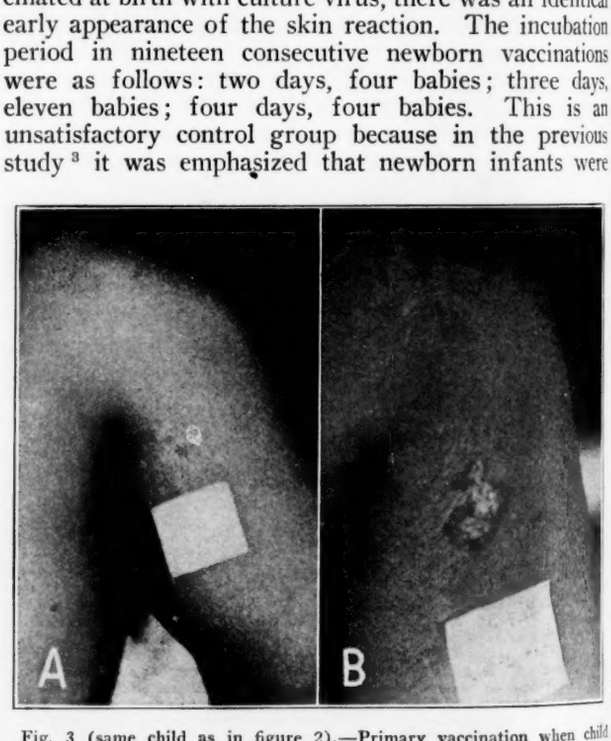

Fig. 3 (same child as in figure 2).—Primary vaccination when child was 23 hours old. Culture virus (Rivers) M54, intradermally; successful. June 22, 1938, size of scar 12 by 10 mm. slightly depressed. Revaccination when child was 2½ years old; thirty needle pressures cutaneously. Early appearance of skin reaction: Unknown. Rapidity of vaccinal cycle: Increased; eighth day involuting. Intensity of skin reaction: Large take, greater than primary. Estimate of immunity: Slight, if any. *A*, third day; *B*, eighth day.

successfully vaccinated somewhat less readily than children of 3 years. It is a common observation, however, among children primarily vaccinated at 3 years, that the skin reaction appears first on the third day or subsequently. No group of children of 3 years of age

vaccinated for the first time is available, followed as soon and as frequently after primary vaccination as necessary to use for controls. One may safely conclude that the early appearance of the skin reactions in 100 per cent of the thirty-eight children admitted to the Children's Hospital for an observation period of five days occurred because of the allergy which developed in consequence of their previous inoculation with vaccinia virus.

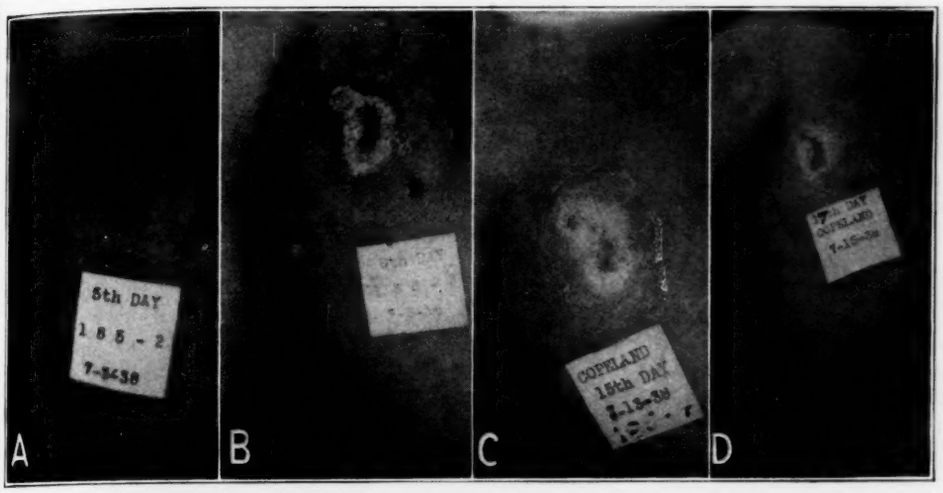

Fig. 4.—Primary vaccination when child was 10 hours old. Culture virus (Rivers) M52, intradermally; successful. June 29, 1938, no visible scar. Revaccination when child was 2¾ years old. New York calf lymph; thirty pressures cutaneously. Early appearance of skin reaction: Present within twenty hours. Rapidity of vaccinal cycle: Not increased; eighth day at or near peak. Intensity of skin reaction: Very large take; greater than primary. Estimate of immunity: None. *A*, fifth day; *B*, eighth day; *C*, fifteenth day; *D*, seventeenth day.

RAPIDITY OF VACCINAL CYCLE

By following the skin reactions to vaccinia virus inoculations, through to involution, the rapidity of the vaccinal cycle (table 3) was observed. It was regarded as an accelerated cycle when involution made its appearance on or before the eighth day after revaccination. In primary vaccinal cycles the peak of the reaction may make its appearance from the ninth to the twelfth day, rarely sooner. Among culture virus cases in thirty-seven revaccinations the cycle was accelerated in 46 per cent (seventeen children) and not accelerated in 51.4 per cent (nineteen children) and unobserved in one child (2.7 per cent). Among those primarily vaccinated with calf lymph virus the vaccinal cycle was accelerated in 85.3 per cent (twenty-nine children) and not accelerated in 14.7 per cent (five children).

INTENSITY OF SKIN REACTIONS

The intensity of skin reactions (table 4) to vaccinia virus seems to be a better index of probable immunity than both early appearance of skin reaction and accelerated vaccinal cycle. In recording the measurements and intensity of skin reactions in the revaccinations studied, observations were made and compared with the protocol of the skin reaction in the primary take which occurred shortly after birth. These reactions fell into three groups, in which the revaccination was greater than the primary, similar to the primary and less than the primary. The intensity of skin reactions to revaccination as described in children primarily vaccinated successfully with culture virus was similar to the controls and greater than the primary in 92 per cent (thirty-four children), similar to the primary in 5.4 per cent (two children) and unknown in one child (2.7 per cent) whose mother took him out of the city, and less than primary in no case. Among the children primarily vaccinated at birth with calf lymph virus either intradermally or cutaneously, the intensity of the skin reactions on revaccination was greater than the primary in 14.7 per cent (five children), similar to the primary in 6 per cent (two children) and less than the primary in 79.4 per cent (twenty-seven children).

ESTIMATE OF IMMUNITY

An estimate of immunity (table 5) in each of the children revaccinated was made in four groups: (1) slight or none, (2) fair, (3) good and (4) immune reaction. In the slight or no immunity group were placed those children who on revaccination gave skin reactions which approximated the intensity of the primary vaccinations among the twelve children who served as controls (fig. 1). Those primarily vaccinated with culture virus (fig. 2) were found to have slight or no immunity, as described, in 80.5 per cent (twenty-nine children) (figs. 3 and 4). In the calf lymph primary vaccinations there was slight or no immunity in 20.6 per cent (seven children). The children grouped as having "fair" immunity were those who showed beginning involution on the eighth day after revaccination. Among those primarily vaccinated with culture virus there were 14 per cent (five children) showing "fair" immunity, and among those primarily vaccinated with calf lymph virus "fair" immunity was found in 6 per cent (two children). "Good" immunity was estimated for those children who on revaccination had accelerated vaccinal cycles, considerably less intense skin reactions than the control group and than their

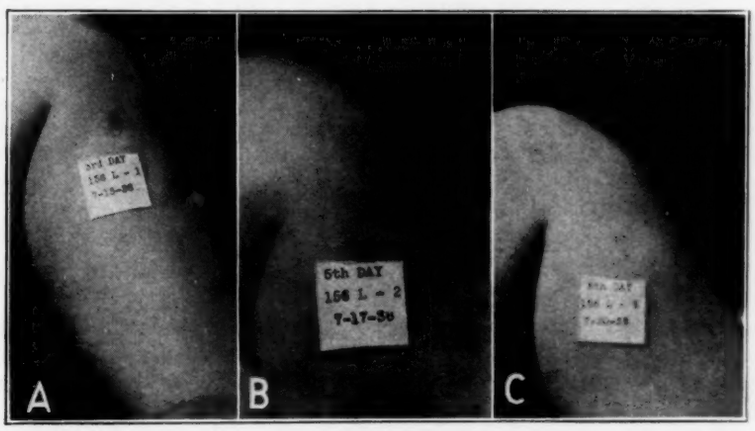

Fig. 5.—Primary vaccination when child was 32 hours old. New York calf lymph, intradermally. July 13, 1938, size of scar 20 by 15 mm., moderately depressed. Revaccination when child was 1 year 11 months old. Thirty needle pressures cutaneously. Early appearance of skin reaction: Present within twenty-eight hours. Rapidity of vaccinal cycle: Increased; fifth day at peak; eighth day well involuted. Intensity of skin reaction: Less than that of primary vaccination. Estimate of immunity: Immune reaction. *A*, third day; *B*, fifth day; *C*, eighth day.

own primary vaccination. Among those children primarily vaccinated with culture virus, two (5.5 per cent) were found in this group. Among those primarily vaccinated with calf lymph virus, an estimate of "good" immunity was made in 41.2 per cent (fourteen children). The highest estimate of immunity was accorded to those children who on revaccination had skin reactions of slight intensity which dried up within a few days, were greatly less intense than the controls and were less than their own primary takes. No child primarily vaccinated with culture virus could be placed in this group. Among those primarily vaccinated with calf lymph virus 32.3 per cent (eleven children) had immune reactions (figs. 5 and 6). Twenty-five children (73.5 per cent) vaccinated primarily at birth with calf lymph virus showed at 2 to 3 years of age immunity of a high order, whereas two of the babies vaccinated at birth with culture virus were found to have good immunity, as judged by the foregoing criteria.

A statistical analysis [5] was made by Dr. E. C. Albritton, who found the results "statistically significant for each set of data. Chance alone would give a similar result in fewer than one of over 200 such investigations."

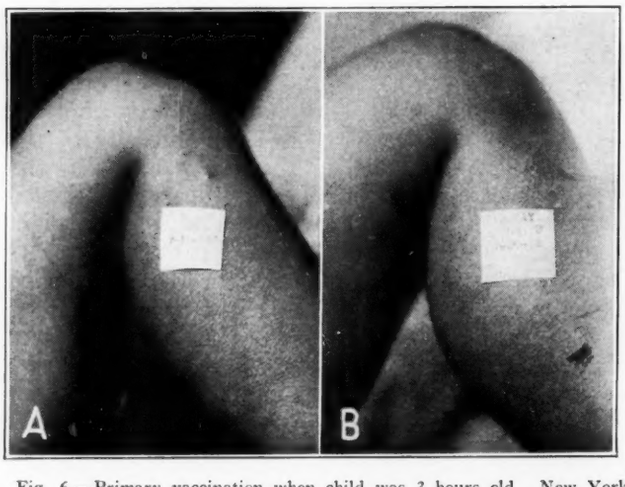

Fig. 6.—Primary vaccination when child was 3 hours old. New York calf lymph, cutaneously. July 13, 1938, size of scar 15 by 15 mm., superficial. Revaccination when child was 3 years one-half month old; thirty needle pressures cutaneously. Early appearance of skin reaction: Unknown. Rapidity of vaccinal, cycle: Increased; eighth day well involuted. Intensity of skin reaction: Less than that of primary vaccination. Estimate of immunity: Immune reaction. *A*, third day; *B*, eighth day.

COMMENT

The immunity sought for by vaccination is complete protection of the individual on exposure to smallpox. If a virus successfully inoculated protects against smallpox, one knows it is a good virus. Culture virus (Rivers) so far as I know has not experienced this test, although it is in use in various parts of the world [6] where it may have this advantage. If it is found to check the spread and stamp out smallpox, its position will be very secure. It really has many advantages over calf lymph virus, once its protective properties have been established. It is inexpensive, is readily transported without refrigeration, has good keeping qualities, is said to be readily usable in the tropics, it lends itself quickly to large scale production and it is free from contamination by bacteria and other viruses. The skin reaction to culture virus intradermally has been found by us in hundreds of babies to be the same as when diluted calf lymph is used intradermally and is milder than with the cutaneous use of calf lymph virus.

The method available to compare culture virus and calf lymph virus as to appraisal of their immunizing properties, revaccination from two to three years after successful takes measures protection to smallpox indirectly. Such evidence would certainly fall down when culture virus was shown to end an outbreak of smallpox in individuals recently successfully inoculated with it.

Yet from the results derived by revaccination of the parallel series of the two viruses here reported, it seems unlikely that culture virus will be successful against smallpox with the certainty and dependability that calf lymph virus has long enjoyed. In fact, substantial immunity was lacking in all but two (5.5 per cent) of thirty-six children who had had successful takes with culture virus from two to three years before revaccination. This was in marked contrast to thirty-four children who had successful takes from two to three years before with calf lymph, twenty-five (73.5 per cent) of whom had good immunity. As these children received their first vaccination at birth, they show that solid, durable immunity can be established in the neonatal period which will persist for from two to three years and probably much longer, when suitable calf lymph vaccinia virus is employed, either by intradermal or by cutaneous inoculation.

1612 Eye Street, N. W.

5. Fisher and Yates: Statistical Tables for Biological, Agricultural and Medical Research, London, 1938.
6. Rivers, Thomas M.: Personal communication to the author.

ABSTRACT OF DISCUSSION

DR. CHARLES ARMSTRONG, Washington, D. C.: I would compliment Dr. Donnally on this work. The groups of cases presented are small, yet the work has been carefully done and the difference in the apparent protection in those vaccinated with calf lymph and with culture virus is so pronounced that I feel the results are significant. Dr. Donnally might have pointed out that the calf virus which he used was the same strain from which Dr. Rivers derived his culture virus, so that he was actually comparing the same strain of virus propagated in different ways. He might also have pointed out that the tissue utilized in these cultures is chick embryo. This brings the culture virus into relationship with the virus cultured from the hen's eggs. The only reason we vaccinate at all, of course, is to prevent smallpox, and it is conceivable that a virus might prevent smallpox more efficiently than it will prevent a revaccination. However, I feel it is probable that that strain of virus which is most effective against revaccination will be the one most effective in preventing smallpox. While this culture virus might conceivably prevent an outbreak of mild smallpox, in the presence of an outbreak of severe smallpox I certainly would want the advantage of the most immunizing strains of virus available. Calf virus is a satisfactory immunizing agent when the method of vaccination is the widely approved multiple pressure method. I feel that health officers and general practitioners who wish an agent for general use would do well to stick to old established preparations and let these new preparations wait until they have been thoroughly tested by such control tests as Dr. Donnally has presented.

Experimental Clinicians.—Clinical science seeks, by observation and otherwise, to define diseases as these occur in man; it attempts to understand these diseases and their many manifestations, and here especially makes frequent use of the experimental method. It makes definite experiments upon disease or watches the effects of experiment conducted by injuries, however these arise; it culls, or actually creates, and uses physiological and pathological knowledge immediately related and applicable to the diseases studied. Its value has been abundantly and frequently displayed in this country by such experimental clinicians as Ferrier, Horsley, Mackenzie, and Head.—Lewis, Sir Thomas: Research in Medicine and Other Addresses, London, H. K. Lewis & Co., Ltd., 1939.

DELAYED PARALYSIS OF NERVES FROM A SINGLE MUSCULAR CONTRACTION

REPORT OF FIVE CASES

J. M. NIELSEN, M.D.

LOS ANGELES

That peripheral nerves may be rendered incapable of conduction of voluntary impulses by indirect trauma of the type known as muscular action is too well known to merit stress; but that such paralysis may result from a single muscular compression, and especially that the paralysis may appear hours to weeks after the trauma, are facts that seem to have been largely overlooked by clinicians for years. Clinical records of such cases were included by Weir Mitchell in his book,[1] and Remak [2] made a special point of delayed paralysis. Bernhardt [3] included the syndrome in his monographic account of neuritis, and more recently Jokl and Guttmann [4] reported a relatively large series of cases occurring in sportsmen.

Mitchell [5] stated:

> As a rule, contusions, unless violent, do not cause immediate symptoms of loss of function. A little numbness and tingling may succeed to the first shock of pain, and only after a time be replaced by grave troubles, as changes by-and-by occur in the bruised nerve; changes only too apt to result in evils quite as permanent as those which arise from more immediate injuries. I have several times met with bad cases of atrophic alterations of muscles, the result of a contusion of a nerve, which for some time after the injury gave few signs of latent injury.

Remak, in citing a number of cases with progressively longer latent intervals, accepted the relation of trauma to paralysis occurring months after it. In one case he took seriously the statement of a patient that a paralysis was definitely related to an injury occurring ten years before. It seems that such a case would need better substantiation. In the cases of Jokl and Guttmann there could be no question of the traumatic etiology, as the pain caused by the injury continued and gradually gave way to the paralysis. This is the usual sequence of events.

A priori it seems strange that muscular contraction should be a potent cause of paralysis of function of nerves which pass through them. Certainly nerves are compressed innumerable times in the average life of a person, and only occasionally is the compression sufficient to injure the nerve seriously. For this reason most authors have considered multiple etiology necessary. Of accessory factors some are certainly constitutional, for certain persons almost regularly suffer mild degrees of paralysis from slight compression of nerves such as crossing the knees, sleeping on an arm or even merely having the limbs elevated. In others toxic effects exert their influence as exemplified by the paralysis of individual nerves occurring with ease in alcoholic addicts or under ether anesthesia. In diabetic patients the same is true. But that such predisposing causes are not essential is shown by the cases of Jokl and Guttmann, in which all reported paralyses were those of sportsmen, who are, as a class, in better general physical condition than more inert persons.

How much compression nerves can at times tolerate is shown by the experiments of Weir Mitchell, who compressed the sciatic nerves of rabbits between a cork plate and a rubber disk weighted down with a column of mercury. He found that a column of mercury acting on a section of nerve from about one-eighth to one-fourth inch (3 to 6 mm.) in length had to have a height of from 18 to 20 inches (450 to 500 mm.) for from three to twenty seconds before the nerve failed to conduct a galvanic current. Even after such compression it regained in fifteen seconds its ability to conduct.

Oppenheim [6] related an interesting observation of his own. In his efforts to relieve, by causing peripheral paralysis, distressing spasms of cerebral origin in the right arm of a young man, he had Krause expose all three main nerve trunks in the axilla and stretch them. Scissors were passed under them; the nerves were drawn out toward the operator and the instrument was slid back and forth along them. During the process there were transient contractions of the muscles supplied by the nerves, but neither motor nor sensory symptoms resulted. It is difficult to imagine how muscular compression could be more severe than this treatment, which, to be sure, was stretching and abrasion rather than compression.

The problem was well stated by Remak: "In all these cases, then, the sudden severe force did not cause an immediate paralysis but only produced the anatomical process which afterward caused an interruption of conduction and signs of degeneration." What now needs to be answered is, "What goes on in the nerve trunk between the time of injury and the onset of paralysis?"

Although anatomic material for study of the sort of cases here under discussion is extremely difficult to obtain, the type of pathologic anatomy from muscular compression seems to be fairly well settled. Mitchell cited cases in which "sclerosis" of the nerve followed local compression. Hassin [7] cited the experiments of Stroebe and Büngner, who examined in detail nerves which they had compressed. There were hyperemia, hemorrhages and flattening of the parts compressed. Within twenty-four hours the myelin and axons appeared granular. In six days the myelin disappeared completely while the axons were preserved but flattened. Hassin also cited Cajal relative to changes following rapid compression. There may be necrosis of the axon, mainly of its superficial fibrils, with preservation of the sheath of Schwann. The histologic changes are essentially degeneration of the parenchymal constituents (myelin and axon) and reactive proliferation of the sheath of Schwann and the surrounding mesodermal membranes (endoneurium, perineurium and epineurium). This seems of crucial importance as the proliferation of the mesodermal membranes, which of course takes time, may constrict the parenchymal structures at a later date. Hassin stated that he considered the essential lesion of sudden compression to be contusion. Pollock and Davis [8] in addition called attention to symmetric elliptic bulbs which may form in the continuity of an injured nerve.

Read before the Section on Nervous and Mental Diseases at the Ninetieth Annual Session of the American Medical Association, St. Louis, May 18, 1939.

1. Mitchell, S. W.: Injuries of Nerves and Their Consequences, Philadelphia, J. B. Lippincott & Co., 1872.
2. Remak, Ernst, and Flatau, E.: Neuritis und Polyneuritis, Vienna, Alfred Hölder, 1900.
3. Bernhardt, M.: Paralysis of the Peripheral Nerves, in Diseases of the Nervous System, Edited by Archibald Church, New York and London, D. Appleton & Co., 1911.
4. Jokl, E., und Guttmann, E.: Schädigungen des peripheren Nervensystems beim Sport, Klin. Wchnschr. **14:** 134 (Jan. 26) 1935.
5. Mitchell,[1] p. 94.
6. Oppenheim, Hermann: Lehrbuch der Nervenkrankeiten, ed. 6, Berlin, S. Karger, 1913.
7. Hassin, G. B.: Histopathology of the Peripheral and Central Nervous Systems, Baltimore, William Wood and Co., 1933.
8. Pollock, L. J., and Davis, Loyal: Peripheral Nerve Injuries, New York, Paul B. Hoeber, Inc., 1933.

Dean Lewis [9] stated his experience, which is that of many surgeons.

The changes occurring in a nerve fiber following a constriction and its removal, attended by a rapid return of function, have not been established. Clinical experience would seem to indicate that the conducting power of a nerve may be totally suspended for months and that within a few days following removal of the constricting band motor function may return. I have seen return of function in the extensors of the forearm within ten days following the removal of a very delicate constricting band which reduced the diameter of the musculospiral nerve by one half. The paralysis had been present for six months. Delicate scar tissue about a nerve in which there are no evidences of intraneural scar may cause the same suspension of function.

There may thus be changes in the muscles, fasciae or sheaths about nerve trunks which later may constrict them, even though they have escaped direct effects of the compression.

A report of five clinical cases follows.

REPORT OF CASES

CASE 1.—*Stumble while carrying heavy object. Sudden pain in leg and appearance of weakness of peroneal group of muscles in two hours. Partial reaction of degeneration.*

Stanley B., a white man aged 48, a truck driver, whose family history was irrelevant, was well until March 5, 1937, when he had an accident. He had had two previous accidents, in one of which his left leg was injured and in the other his back was strained, but neither seems to have any bearing on the present problem.

On March 5 at about 4:30 p. m., while he was carrying one end of a showcase through a doorway, he stumbled with his right foot and immediately felt a sharp pain in the leg (peroneal region) but continued with his work. His foot began to tingle but he drove his truck back to his place of business, reaching it at about 5:30 p. m. He went to his home and had to wait a short time for his supper; thus one and one-half to two hours had elapsed from the time of the accident. On arising to walk to his dining room he noticed that he could not raise his toes from the floor. He massaged the foot and leg with liniment and soaked the foot in a solution of magnesium sulfate.

On the following day he was unable to work because he could not tell when driving his car whether his foot was properly pressing on the brake or accelerator, and when I examined him eighteen days later he still had foot drop.

Examination showed the patient to be well nourished and in good general physical health except that he had considerable sclerosis of the arteries. His blood pressure was 140 systolic and 106 diastolic. The osseous system was normal. There was, as stated, foot drop on the right, and the right leg at the calf was slightly smaller in circumference than the left (the peroneal group a little smaller). Extension of the toes was weak but not so weak as flexion of the ankle. There was hypesthesia in the area of skin supplied by the common peroneal nerve. Otherwise results of the neurologic examination were entirely negative.

Electrical reactions showed loss of faradic irritability in the right peroneal group of muscles, but the cathodal closing was greater than the anodal closing contraction. There was thus a partial reaction of degeneration.

CASE 2.—*Patient fell 15 feet, alighting on his feet. Fracture of right os calcis but foot drop on the left. Examination after eleven months showed complete reaction of degeneration of common peroneal nerve.*

James W. T., a white man aged 52, a mechanic, was well until March 30, 1934, when, while working at his usual occupation of moving a safe, he lost his balance. Realizing that he was about to fall he leaped clear of obstructions and landed on his feet on concrete 15 feet below. He had immediate severe pain in both feet and was unable to stand.

Taken to the hospital, he was examined by surgeons and the right os calcis was found fractured. The left foot was discolored and badly bruised but the bones were not fractured. The patient was hospitalized for only five days, and when he was allowed to go home foot drop was discovered on the left. He was confined to his home for five weeks and then he got about on crutches, resuming work in October.

When I saw him on Feb. 18, 1935, there was essentially nothing wrong with the patient except for foot drop on the left. There was no arteriosclerosis or other physical abnormality, and no predisposing cause for the foot drop could be found, but that condition was complete. The toes could not be raised. An area of anesthesia was found corresponding to the distribution of the common peroneal nerve. Electrical reactions showed complete absence of faradic and galvanic irritability, and there was atrophy of the peroneal group of muscles.

CASE 3.—*Healthy man suffered fall astride a plank and reached forward and upward with right hand to grasp support but failed to reach it. Usual signs of urethral injury but also paralysis of right serratus anterior muscle. Partial reaction of degeneration of long thoracic nerve.*

Isidor L., a man aged 37, Jewish, a laborer, with an irrelevant family and past personal history, was well and working at his usual occupation until March 10, 1930, when he suffered an accident. He was walking along a plank entering a new dwelling before an entrance had been constructed when he lost his balance and fell astride the plank. He reached forcefully forward and upward for support, which he failed to attain. However, he held to the plank with his legs and did not fall off it. He suffered for some hours with pain in his shoulder.

He was taken to a hospital because of the local injury and hematuria and remained there for three weeks. Weakness of the right shoulder appeared after some days, but as he remained in bed this gave him no particular trouble and he did not realize its seriousness. When he was discharged to return to work he was unable to do so.

When I saw him on May 21 he had been studied by several surgeons and the Wassermann reaction and roentgenograms of the shoulder had been examined, but no light had been thrown on the case from those points of view. Dr. Wallace Dodge believed the patient had a neuritis of the long thoracic nerve and referred him for possible reaction of degeneration.

There were the classic features of paralysis of the serratus anterior muscle on the right. At rest there was hardly any deformity, but when the arms were extended the angle of the right scapula projected far backward and the patient was unable to raise the arm well above the shoulder. The paralysis was so complete that one could with ease insert one's fingers between the scapula and the dorsal muscles and take hold of the scapula. This facilitated the test for reaction of degeneration because one could feel the contraction of the serratus anterior muscle when the nerve was stimulated. Other muscles were not involved.

The blood pressure was found to be 126 systolic and 86 diastolic. The pulse rate was 72 per minute and the arteries were in good condition. The heart and lungs were normal; in short, there was nothing of moment in the general physical examination, and the neurologic examination gave only the evidence incident to the paralysis of the serratus anterior muscle on the right. Some difficulty was encountered in attempting to stimulate the long thoracic nerve alone with the electric current. Because of a fairly good panniculus adiposus and good musculature in general the current tended to spread. However, after considerable effort success was obtained and stimulation with a small pole gave a contraction in the serratus anterior muscle alone. The cathodal closing contraction was found to be greater than the anodal closing, but no irritability at all to the faradic current was found.

At that time I was not acquainted with paralyses occurring from such accidents and was inclined to believe that an independent neuritis had developed. For this reason the patient

9. Lewis, Dean: Some Peripheral Nerve Problems, Boston M. & S. J. **188**: 975 (June 21) 1923.

sought another physician, who diagnosed, without knowledge of the details just described, a separation of the muscle from the scapula; he surgically fixed the scapula to the posterior thoracic wall.

CASE 4.—*Sudden thrust of right arm upward during impending fall. Pain in region of right shoulder still present one month later. Gradual appearance of atrophy of right trapezius, spinati and rhomboid muscles. Diminished faradic irritability of right dorsalis scapular nerve.*

Herbert R., a white man aged 55, a laborer, had had typhoid in 1902 and an appendectomy in 1924. He was referred to me on Aug. 29, 1936, because of pain in the region of the right shoulder dating from an accident July 21 of the same year. He gave a history of being perfectly well and working as usual packing cases in the warehouse of a soap factory when his left foot slipped forward. He threw his right arm upward over his head to balance himself and immediately felt a very sharp pain in the right shoulder joint. He became nauseated and vomited and was unable to continue work.

He was treated at his home for four days with massage and liniment before he returned to work. When he did return he continued to have the pain, which was worse at night. When the pain was severe he obtained some relief by placing his arm over his head. He was referred five weeks after the accident because of lack of improvement.

The patient was well nourished and in good general physical condition. The blood pressure was 164 systolic and 90 diastolic. The radial and brachial arteries were palpable but not materially sclerosed. The teeth were in poor condition. The essential changes were referable to the muscles of the right shoulder region. There was atrophy of the infraspinatus and supraspinatus, rhomboid and trapezius muscles, all on the right side only. There was a little winging of the right scapula, apparently from the weakness of the rhomboids and the trapezius. There was otherwise essentially no pathologic feature.

Electrical reactions showed reduction of faradic irritability of the right dorsal scapular nerve as compared with the left. The relations of the two types of galvanic reactions were normal.

CASE 5.—*Slipping of foot from rung of ladder to ground. Pain, progressive paresthesia, followed by foot drop after fourteen hours, which increased for two days. Splinting of foot. Gradual recovery.*

P. M. M., a white man aged 41, suffering from chronic but well compensated valvular disease of the heart, was referred by the state industrial accident commission because of dropping of the left foot. Except for "heart trouble" resulting from scarlet fever at the age of 8, tonsillitis at one time early in life and mild influenza during the World War, he had always been well and able to carry on his work as a carpenter.

On Nov. 22, 1938, he had a minor accident affecting the left foot. He was about to ascend a ladder with 30 pounds of shingles on his left shoulder and had placed his left foot on the first rung, when he turned at the sound of an automobile horn behind him. The distraction caused his foot to slip off the rung and strike the ground with some force, so that he immediately felt a sharp pain across the ball of the foot. However, he climbed up the ladder and continued with his work as usual for the one and a half hours of the day still remaining. The foot continued to pain him and swelling gradually appeared along the dorsal region of the transverse arch.

When the day's work was done he drove his own car home, and he slept as usual that night. When he arose the next morning he still had some pain in the ball of the foot, and numbness had appeared over the dorsum of the great toe and over the adjacent portion of the foot. The swelling of the dorsum of the foot had increased. As the patient attempted to walk he discovered that the toes of the injured foot tended to drag. Because of shortage of building materials there was no work for him to do on that day, so he remained at home and nursed the foot with hot fomentations and massage.

The second day following the accident was a holiday so he again remained at home. The foot drop was then found to be complete and the numbness had extended half-way up the anterior surface of the leg. On the third day, as he was unable to carry on his work, which was then available, he consulted a physician, who found the foot drop complete and applied a cast. This was removed on the following day and a splint substituted to prevent stretching of the paralyzed muscles. Physical therapy was started, and the patient remained at home.

I saw the patient thirteen days after the injury. He stated that his foot was much improved, so that he could raise his toes slightly off the floor. He was a heavily built man weighing 218 pounds (99 Kg.) and was 70¾ inches (177 cm.) tall. Aside from a little lateral enlargement of the heart and a booming first sound, plus six badly infected teeth with surrounding pyorrhea, the left foot was the only element worthy of note in the physical examination. The patient was able to stand on the ball of either foot separately but was unable to raise the toes of the left foot when attempting to stand on his heels. There was hypesthesia to touch and pin prick on the dorsum of the foot and ankle, above which it gradually shaded off to normal. There was neither pain nor swelling in the tissues of the foot. Electrical reactions showed a slight diminution to faradic stimulation in producing dorsiflexion of the toes and foot. Otherwise conditions were normal.

A diagnosis was made of compression neuritis of the left common peroneal nerve, due to muscular action, in the stage of recovery.

This case seems unusually clear as one of the type here presented in that the paralysis progressed for two days after the injury in spite of rest. The paralysis seemed to begin fourteen hours after the accident and progress to completion in another twenty-four hours.

COMMENT

When it is recognized that muscular contractions, even a single forceful or unusual contraction, can thus after a latent period of hours or weeks give rise to functional paralysis of a nerve, there is danger of ascribing any obscure paralysis to some muscular action, especially if minute inquiry is made in every case. I would postulate that in a given case before paralysis is ascribed to muscular action certain conditions must be present: 1. There must have been some sort of sensory discomfort in the affected area at the time of the accident. 2. There must have been a recurrence or continuation of the discomfort for some hours or days. 3. The paralyzed nerve must be anatomically so situated that the muscles involved in the unusual strain compressed it in the act considered etiologic. 4. The paralysis must have appeared within, say, two months of the strain.

SUMMARY AND CONCLUSIONS

Attention is called to paralysis of peripheral nerves resulting from a single unusual muscular contraction and also to the delayed appearance of the paralysis.

As such paralysis may result from such action as a stumble, a sudden reaching forward or a sudden thrust of the hand upward for the purpose of regaining one's balance, the etiology is easily overlooked and in industrial work the industrial nature is often not conceded.

It is quite probable that more than one type of etiology may be concerned in such cases, e. g., intoxication, general anesthesia or chilling, but the muscular action with resultant contusion of the nerve is the exciting cause.

To avoid the danger of ascribing any obscure paralysis of a nerve to hypothetic muscular action I postulate that for a given case to be valid as belonging to this group there must have been (1) some sort of sensory discomfort in the affected area at the time of the injury, (2) continuance or recurrence of the

discomfort for hours or days, (3) possibility of compression of the affected nerve by the muscular contraction assumed responsible, and (4) appearance of paralysis within, say, two months of the strain.

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ABSTRACT OF DISCUSSION

DR. L. J. POLLOCK, Chicago: Lesions of the peripheral nerves are rare in civil life as compared with those that we saw in the war, and lesions of the peripheral nerves that occur as a result of indirect trauma are still rarer, and those that occur some time after trauma are rare indeed. One of the causes of a lesion of a peripheral nerve is a sudden, strong contraction of a muscle. Such a contraction could be the result of stretching such as would occur if you were falling off a ladder and you suddenly reached for a rung. Even if you do not grasp the rung of the ladder, you have produced a stretching. Another type is that which is produced by dislocation of a nerve, which might occur in an ulnar nerve resting in a rather shallow groove of the olecranon, where a contraction of the triceps might produce dislocation of the ulnar nerve, or you may produce a compression against a sharp edge of a muscle, just as Dr. Nielsen reported where the long thoracic nerve was compressed by the scalenus muscle, or at times the pronator teres may be compressed against the median nerve. If a nerve is injured by compression or by stretching or contusion, the effect on the nerve is immediate. If you ligate a nerve or if you bruise a nerve there is an immediate loss of function of that nerve of varying degree; therefore I think that in these instances of indirect trauma to nerves in which the symptoms occur some time after the injury we must consider the possibility of some other intermediate action whatever it might be. Among them are hemorrhages. There may be some inflammatory reaction of tissue adjacent to the nerve. Finally, one must give thought to the hypothetic consideration of what are known as the instances of traumatic mononeuritis, in which case they usually occur after some time, the bridging period of course also being held to some hypothetic reasonable duration where, under the condition of cachexia, chronic infection, chronic alcoholism or diabetes, a nerve that is what we would ordinarily consider mildly injured might then become the site of a mononeuritis. I am dubious as to the occurrence of such a condition. There is another circumstance that is apparent from these cases. The first patient noted a foot drop one and one-half hours after injury. The second patient landed on his feet and fractured the os calcis of one leg. He was put to bed, I take it, and on the fifth day it was noted that he had a foot drop on the left side. I have had that experience numbers of times, but does it mean that the foot drop occurred on the fifth day, and I should like to know whether they actually in examining the patient said that the foot drop was not present on the first day. A patient may come to us and have noted, for example, that he had a marked atrophy and the atrophy was progressive but the paralysis was immediate and perhaps not noted. I would conclude from this study that this is a rare group of cases to which our attention should be called, but we should be careful in evaluating the interval between the time of injury and the actual onset of loss of function and not the time when it is noted by the patient or some one else that some loss of function has occurred.

DR. R. B. RANEY, Los Angeles: From a surgical point of view, the conditions seen at operation in cases of nerve injury are almost too well known to be worthy of mention. However, cases are occasionally seen in which the paralysis appears later and extreme changes in the structure are observed at operation. I have had the opportunity of seeing only one such case, and changes had occurred not only in the overlying muscle but also in the nerve roots. This was the case of a 20 year old girl who had suffered an injury to the right brachial plexus. In attempting to avoid injury to her face from a breaking windshield during the automobile accident she turned her head sharply to the right, and the sudden stop of the car snapped her neck. She suffered at the time pain in the shoulder, arm and hand. There was some numbness and local tenderness, which largely disappeared in a few weeks. As far as neurologic signs following the injury were concerned, they were not definitely established since a neurologic examination had not been done. About five weeks after the injury, pain and impaired motor function of the affected arm reappeared. Examination several months later showed involvement of almost the entire brachial plexus; impaired sensation and motor weakness were striking. Exploration revealed the scalenus anticus muscle largely replaced by fibrous tissue, adherent to the roots of the plexus. The scalenus anticus muscle was removed, showing the roots of the plexus extremely flattened. Recovery of function was remarkable but not complete. This case illustrates the profound changes in perineural structures and the delayed paralysis that can occur from a single muscular contraction with, of course in this case, other factors playing a part. Therefore it is not only conceivable but reasonable to assume that less severe muscular contractions can cause local injury to the perineural structures. Finally, secondary injury to the nerves themselves by contraction of fibrous tissue seems decidedly reasonable.

DR. PERCIVAL BAILEY, Chicago: I should like to ask Dr. Nielsen whether he had a reason for choosing two months as the upper limit or whether he was merely guided by the principle that the longer the time elapsed the less probable would be the causal association and thought merely that after two months it probably would be too slight to consider.

DR. J. M. NIELSEN, Los Angeles: As to the onset of the paralysis, I cannot say because I did not see the patient until some time afterward, but the records of the hospital in which the patient was placed gave the usual results of physical examination as made by the physician at the time and the usual visits without any mention of any paralysis. As to Dr. Bailey's question, I am guided by the improbability of things developing later, and I have tried to state the reasons for this more accurately in the paper. I have taken the attitude that something should be evident within two months. Weakness may develop as it did in some cases and continue to develop for many months, but there should be some indication before the end of the two months.

THE USE OF COLLOIDAL CALOMEL OINTMENT IN DERMATOLOGY

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Mercury ointments in various forms have long been a standby for the dermatologist. First, metallic mercury ointments were employed, and in recent times the ammoniated mercury ointment has enjoyed tremendous vogue. In the last few years, calomel ointment has been used in the so-called clean inunction method in the treatment of syphilis.

Calomel ointment, first prepared in France during the last century, contained 10 per cent of calomel in petrolatum. The British used 20 per cent of calomel in lard. A 30 per cent ointment with white petrolatum was introduced into the National Formulary V (1926) under the name of Ointment of Mild Mercurous Chloride. In N. F. VI (1936) the base was changed to equal parts of white petrolatum and hydrous wool fat.

Dr. Lewis C. Britt,[1] chemist of the Oregon State Board of Pharmacy, first pointed out that the N. F. VI ointment gave a narrower inhibitory ring in the agar plate test for antiseptics than did the N. F. V ointment.

Mr. E. E. Vicher[2] at the University of Illinois College of Pharmacy undertook the study of the ointment.

Assisted by a grant from the American Pharmaceutical Association.
From the University of Illinois College of Medicine (Dr. Cornbleet) and Rush Medical College (Dr. Slepyan and Dr. Ebert).

1. Britt, L. C.: The Antiseptic Value of Calomel Ointment N. F. V. and N. F. VI, J. Am. Pharm. A. **26:** 646-647 (July) 1937.
2. Vicher, E. E.; Snyder, R. K., and Gathercoal, E. N.: An Improved Calomel Ointment, J. Am. Pharm. A. **26:** 1241-1245 (Dec.) 1937.

He developed calomel in which the particles were very small, 0.5 micron or less in diameter. This calomel in aqueous suspension with gelatin was incorporated into the ointment base. The new calomel ointment produced an inhibitory ring from three to six times as broad as did the official calomel ointment.

The improved or "colloidal" calomel ointment has been extensively investigated from the chemical, bactericidal, pharmacologic and toxicologic standpoints. It appears to be no more toxic than the N. F. ointment, which has never been considered as toxic for human beings in doses of 1 drachm (4 Gm.). It has a prophylactic value in syphilis at least equal to that of the N. F. VI ointment.

As it is not unreasonable to expect that a colloidal calomel application with its demonstrated efficiency as a superior bactericidal agent should find use in certain cutaneous disorders, this colloidal calomel ointment has been used in the dispensary of the dermatologic clinics of the Cook County Hospital to a sufficient extent to justify a preliminary report.

USE IN IMPETIGO CONTAGIOSA

We have found its greatest therapeutic value to be in impetigo contagiosa. In about 130 cases of this infection colloidal calomel ointment has served as an extremely efficient remedy. The use of ammoniated mercury ointment has long been a standard agent in impetigo, but all experienced dermatologists attest the observation that for some reason this medicament is not as efficient as it was in the past. According to our observations, colloidal calomel ointment clears the eruption in an average of one third to one half the time required by ointments of ammoniated mercury (chart). This is particularly gratifying since the colloidal calomel ointment is both cleanly and, so far as our experience goes, not toxic. In not more than three or four instances it has produced a slight irritation, but this was not great enough to necessitate its withdrawal. Its cleanliness is to be emphasized because it gains the patient's cooperation and makes it a favorite over other efficient agents, such as applications of gentian violet solution.

Colloidal calomel ointment was found useful in other superficial pyodermas in addition to impetigo. In ecthyma, the base of the lesion is so deep as to require removal of the overlying crust, whereupon the colloidal calomel ointment proves curative. In Bockhart's impetigo, which is a more superficial infection of the hair follicles than that in furunculosis, and in furunculosis itself, no benefit was obtained from the use of colloidal calomel ointment.

ERYTHEMATOUS DERMATITIS BEHIND EAR

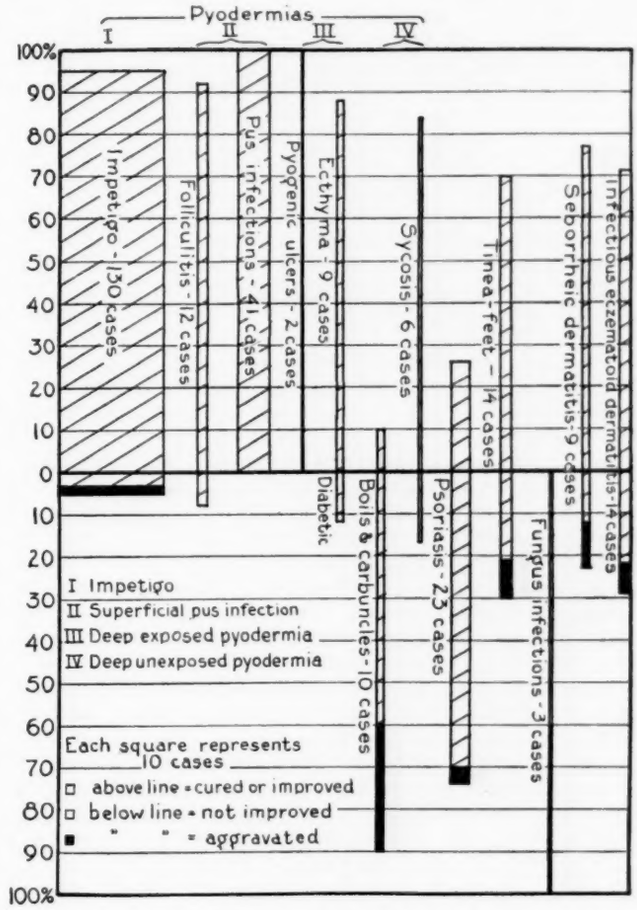
There is a condition which produces a superficial erythematous dermatitis in the fold behind the ear which is diagnosed most often as seborrheic dermatitis and which some authorities think is due to a streptococcic infection. This is particularly resistant to treatment and especially so in that form in which the disease process reaches around to the front of the ear. In several cases of this disorder, the use of colloidal calomel ointment has been of benefit. It has been more effective than any other agent we have used.

INFECTED LEG ULCERS

Three patients with leg ulcers which, by their appearance, were undoubtedly continued or aggravated by secondary pyogenic infection, received much benefit from applications of colloidal calomel ointment. With no other treatment than the usual advice to the patient to remain off his feet as much as possible, these ulcers healed. In a number of other instances of leg ulcers on a basis of poor circulation, these applications were of no benefit.

OTHER DERMATOSES

Several patients with early psoriasis were benefited by applications of colloidal calomel ointment. It must be emphasized that these early cases are as a rule easily improved by ammoniated mercury ointment and that improvement with the calomel ointment represents no great triumph. In older cases of psoriasis and in the inveterate ones, colloidal calomel ointment did not improve the lesions.



Dermatoses treated with colloidal calomel ointment.

Since colloidal calomel ointment proved to be so efficient in some of the superficial infections, it was hoped that it might likewise be beneficial in the superficial fungous infections such as eczematoid ringworm. Unfortunately, colloidal calomel ointment did not influence these infections.

There is a relatively superficial, sharply defined, exudative, patchy dermatitis that occurs on the backs of the hands and forearms particularly, but which may appear elsewhere also, called infectious eczematoid dermatitis. This probably results from the secondary infection of an already irritated base. Several of these cases were improved by applications of colloidal calomel ointment. Two of them were irritated by this form of treatment, so that it had to be stopped.

A number of other dermatoses were treated with the colloidal calomel ointment more or less unsuccessfully.

There is no benefit from its use in lichen planus, paronychia due to yeast infections, pityriasis rosea, tinea circinata, lupus erythematosus or lupus vulgaris.

SUMMARY

Colloidal calomel ointment in this study was found to be a clean, unusually effective agent in impetigo contagiosa and related superficial pyodermas. Seborrheic eczema behind the ears, which is often quite resistant to treatment, was favorably influenced by applications of colloidal calomel ointment. It improved leg ulcers aggravated or continued by a secondary pyogenic infection; also some forms of seborrheic eczema and early cases of psoriasis. In other dermatoses, colloidal calomel ointment either was without benefit or proved to be irritating.

Clinical Notes, Suggestions and New Instruments

EIGHT YEARS DEPENDENCE ON A RESPIRATOR

AN UNUSUAL CASE OF POLIOMYELITIS

SCOTT LORD SMITH, M.D., POUGHKEEPSIE, N. Y.

Seven years dependence on a respirator is an experience sufficiently unusual to warrant chronicle and comment. When the cause of such dependence is a case of acute anterior poliomyelitis with resultant massive paralysis involving practically all voluntary muscles below the clavicles and all automatic respiratory muscles with the exception of the right leaf of the diaphragm, the number and magnitude of the problems presented are all too evident. In these seven years the subject of this report spent more than half his time in the respirator, never acquiring a capacity to sleep and carry on respiration simultaneously. During this time three types of problems arose: (1) those immediately connected with his care, (2) those concerned with the physiologic changes occurring as a result of the extensive paralysis and (3) those involved in a study of his respiratory control. The first two of these problems will be discussed in this paper; the third is now under investigation. In order to show what problems arose in dealing with the acute illness, the maintenance of body function, the treatment of upper respiratory infection and pneumonia in one who could not cough, and the preservation of function of the few unimpaired muscles, a brief summary of the condition of the boy on admission to the hospital in September 1931 and at the end of each subsequent year will be given.

B. S., a boy aged 13 years, was admitted to the Medical Service of Vassar Brothers Hospital on the fifth day of an acute illness. A diagnosis of poliomyelitis was confirmed by a high cell count of the spinal fluid, and 60 cc. of immune serum was given at once intramuscularly. The patient was exceptionally well nourished and developed and was not at that time in immediate respiratory distress, although his extremely labored breathing was short, shallow, rapid and confined entirely to the diaphragm. The intercostal muscles did not move at all. The temperature was 103 F., the pulse rate 110 and the respiratory rate 30. The pupils were equal and contracted, reacting sluggishly to light. There was no paralysis of the ocular or facial muscles. There was no trouble in swallowing. The heart was rapid and regular except for an occasionally missed beat. The sounds were clear and without murmurs. The lungs were clear and the abdomen was normal except for the exaggeration of abdominal respiration. There was complete paralysis of all four extremities, the patient being able to move only the toes of both feet and to make slight motions with the left hand and forearm. The cutaneous reflexes were absent.

Twelve hours after admission, increasing dyspnea and cyanosis demanded the use of the respirator and on the second day catheterization became necessary. As extreme cyanosis occurred within thirty seconds after the respirator was opened a team of four persons was required, a doctor to do artificial respiration, another to catheterize, a nurse to change the sheets and another to rub the back. Even with all four working simultaneously and at top speed, from three and a half to four minutes was necessary and the boy approached asphyxiation and unconsciousness.

For two days the temperature fell. It then rose to 108 F. and again dropped rapidly, ceasing to be significant. Persistent muscle twitching of the face, neck and left leg was troublesome from the first and continued during four weeks in all four extremities. This necessitated frequent sedatives. There was also extreme difficulty in establishing intestinal action, and for two or three days a paralytic ileus seemed about to occur. Gradually, however, the combined use of cathartics and enemas was successful. Poor appetite required feeding by tube. But after a few months the body became adjusted, the gastrointestinal tract resumed its normal functioning, appetite returned and ability to breathe improved. After seven months of paralysis a general upturn in physical condition was observable. Gradually the use of the auxiliary muscles, semivoluntary in character, made it possible for the patient to spend more and more time out of the machine. The only lessening of the paralysis, however, was in the wrist and finger of the left hand, in one finger of the right hand and in the flexor muscle of the left thigh. Movement was possible in these muscles only when the boy was in the bath.

In September 1932 the child could remain out of the respirator for eight or nine hours without undue fatigue. Fluoroscopic examination showed a right diaphragm with an excursion estimated at 2 cm. and a negative action of the left diaphragm. No motion of the intercostal muscles could be detected. The auxiliary respiratory muscles, especially of the scalenus group on the right side, seemed to have developed a semiautomatic action. Outside the respirator he was never able to sleep and could eat but little without experiencing a sense of fulness. There had been no changes in the affected muscles. His weight, which in the spring had been 73 pounds (33 Kg.), had increased to 92 pounds (42 Kg.). His general condition was good, his spirits were excellent. He enjoyed a daily tub bath, made trips about the hospital in a wheel chair and played several games adapted to his capabilities.

The second year was one of ups and downs. Dr. Drinker felt that it was important for the boy to regain self confidence and therefore advised that he be forced to discontinue sleeping in the machine. It was hoped that fatigue would eventually induce natural sleep. On one occasion he was kept out of the respirator for two and one half days until complete exhaustion forced a return to artificial respiration. Later we tried for several weeks having him remain outside part of every second night, but as there were progressive loss of weight, increased irritability and digestive upsets we abandoned attempts to force normal respiration during sleep. During most of this year he lost weight. In March and June there were periods of fever and infection of the upper respiratory tract, which were difficult to relieve and painful. Continuous artificial respiration, aspiration of secretions from the nasopharynx, morphine and ammonium chloride were found helpful.

On the afternoon of June 16, 1933, without warning of any kind, the slowly built-up ability to breathe with the auxiliary muscles, especially with the right scalenus group, suddenly ceased. Complaining of a lump in the chest, he became suddenly cyanotic. In the respirator he rapidly regained color and comfort. Examination showed that the voluntary auxiliary muscles of respiration, the contractions of which with each respiration had been visible a few hours earlier, had ceased to work on the right side, where they had been the strongest. Two weeks later muscular ability had again been built up and for an hour at a time he was able to breathe comfortably. In a month he could breathe alone for twelve hours. The left scalenus muscle group developed and soon exceeded the right ones in strength. This condition has continued.

In the early part of the third year the lost weight was regained. Thereafter, although there was no change in respira-

During the interval between the preparation of this report and its publication, the patient has completed his eighth year, with dependence on the respirator, without material changes over the preceding year.

The studies on metabolic changes referred to in the first paragraph and made in collaboration with Prof. Elizabeth Magers, of the physiology Department of Vassar College, will shortly be published elsewhere.

tory function he did well on his regular routine and was in good spirits. In a station wagon which carried his wheel chair he took many rides about the country and often went to the movies. Being away from the respirator gave him no apprehension, and he was able to eat well outside. Hay fever and eczema, however, caused considerable distress. Increase in alkalinity of the urine was accompanied by frequency and discomfort, which was readily relieved by the administration of ammonium chloride. Occasional hematuria accompanied by vesical irritation appeared for the first time.

During the year 1935 he continued to show symptoms of kidney stone, acute pain in the right lumbar region, hematuria, nausea and the passage of small "gravel" by the urethra. In April he had pneumonia, with consolidation in the left lower lobe. For nearly two weeks there was irregular fever up to 104 F., pain in the left side of the chest, and choking. Relief from thick mucus which he could not loosen was obtained by aspiration with a suction pump, oxygen being given with a nasal catheter. Gradually he made a complete recovery.

The fifth year was an uneventful one. An x-ray examination showed the presence of a stone in the right kidney pelvis. Two months later stones appeared in the left kidney pelvis and low down in the left ureter. Sex development was average for his age.

In 1937 the chief changes were psychologic. In general he lost confidence in himself and was fearful of being at a distance from the respirator, so that he gave up his frequent trips. He lost his former belief in his eventual recovery and in the value of living. He maintained, however, his interest in all athletic contests, in cross-word puzzles and in cards, checkers and chess.

The seventh year was without new development. The loss of morale, begun in the previous year, continued and increased. Through most of 1938 he did not leave the hospital grounds. There was increasing pain and hematuria from the renal calculi, which were seen by means of the x-rays to be increasing in size. For three months approximately 85,000 units of vitamin A was given daily. As the calculi had not decreased in size at the end of this period, this therapy was discontinued.

GENERAL PROBLEMS

Later in the fall of 1938, signs of eye strain became apparent. Glasses with a 3 degree prism base up, in addition to ordinary correction, raised the field of vision one foot nearer to the plane of direct vision. This procedure not only had the desired effect on his vision but caused a more important uplift of his general morale.

Deformities came on late and insidiously. A tendency to a lateral curvature of the spine became apparent when he first began to use a wheel chair in 1932, even though the shoulders were elevated only a few inches in order to give him an opportunity to look around. Sand bags and other means of correction proved ineffectual and uncomfortable and were abandoned. The resulting curvature has slowly increased in the last two years. Contractures of both hands appeared considerably later and became stationary.

Constant twenty-four hour nursing attention was maintained from the first and we were unable to find any way to dispense with it or even to combine the care of this boy with that of others. All changes in position of the body from the shoulders down had to be made by the nurse, and all parts exposed to pressure were kept cushioned with rings. As a means of maintaining a healthy condition of the skin the daily bath was begun as soon as respiratory function permitted. The old style portable typhoid tub served this purpose admirably. In addition the nurse had to feed him each mouthful; she also turned each page of the books he read and made the moves he indicated in playing games. She remained constantly within earshot, because we were unable to arrange a call system, and speech for him was possible only during one phase of the respirator action. Nursing care was exceeded in importance only by mechanical respiration.

The original respirator has been in service during the entire seven years, except for a period of two months when the motor blower exhaust was being replaced by bellows. These are much quieter and have the additional advantage of being operable by hand in an emergency. As fuses had blown out several times when continuous operation was necessary, the manual operation was reassuring to the patient and his attendants although its use has never been required.

SUMMARY

At the time this is being written the subject of this report, a youth nearly 21 years of age and a victim of the 1931 poliomyelitis epidemic, has been dependent on a respirator, at least during sleep, for over seven years. He has been through the vicissitudes of colds, hay fever, eczema and pneumonia. He is still troubled by renal calculi, a continuously developing spinal curvature, and occasional mental depression. The nearly complete paralysis has given opportunity to study some of the concomitant metabolic changes.

SULFAPYRIDINE IN TRACHOMA

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EL PASO, TEXAS

To the growing list of diseases in which sulfapyridine may be found of use we should like to add trachoma. In two cases, herewith reported, we have observed astonishing improvement in the chronic form of the disease when treated with sulfapyridine.

REPORT OF CASES

CASE 1.—F. F., a white youth aged 15, first seen by us March 11, 1939, had been under treatment for trachoma elsewhere for about one year. Examination showed both corneas markedly opaque. There were no clear areas on either cornea. Vision in both eyes was fingers at 1 foot. Pannus was markedly developed on both corneas. The under surfaces of both upper lids were covered with follicles. The Wassermann and Kahn reactions of the blood were negative. The patient was hospitalized and massive doses of sulfanilamide were given. During the period of hospitalization, covering one month, about 1,000 grains (65 Gm.) of sulfanilamide was given. Local treatment with ophthalmic ointments, copper citrate and quinine bisulfate was given. At the end of one month the patient was discharged from the hospital only slightly improved. The patient went home, where he used only local treatment, consisting of ophthalmic ointment quinine bisulfate twice a day. On July 24 he was again seen at our office. No improvement was noted. At that time we prescribed sulfapyridine, 7½ grains (0.5 Gm.) every four hours. August 5 we again examined the patient. The lower half of each cornea was found to be free from pannus and was completely transparent. The vision was 20/50 in both eyes. The under surfaces of the lids were smooth and free from irritation. The patient was told to continue the same dosage of sulfapyridine. August 26 we last saw the patient. At this time both corneas were almost completely transparent and all signs of pannus had disappeared. Vision was 20/30 in the right eye and 20/40 in the left eye (without glasses). There have been no toxic reactions to the sulfapyridine.

CASE 2.—G. U., a white man aged 49, admitted to our outpatient service at a local hospital Aug. 11, 1939, had been treated for trachoma for about five years. The Wassermann and Kahn reactions of the blood were negative. Every conceivable antiseptic had been used in the eyes. Two years before admission bilateral tarsectomy was done on the upper eyelids. Some months later a plastic procedure was performed for "entropion." Certain of the organic silver preparations had been abundantly used as instillations in the eyes, so that there was on admission a definite argyrosis of the bulbar and palpebral conjunctivas. Examination on admission showed marked opacity of both corneas, well developed pannus and deep scarring of the under surfaces of the upper lids but no trichiasis. Vision was fingers at 6 feet in both eyes. August 23 we prescribed sulfapyridine 7½ grains every four hours. Examination of the eyes August 30 showed both corneas beginning to clear and the pannus lessening. September 6 the lower half of each cornea was becoming transparent; the upper portions were much less opaque, with tiny, scattered areas of transparency. The pannus had nearly disappeared in both eyes. Vision was 20/100 in both eyes.

COMMENT

While realizing that adequate conclusions cannot be drawn from clinical results obtained in only two cases, we nevertheless were greatly impressed with the remarkable remissions of pathologic signs obtained in two cases of chronic trachoma when sulfapyridine was given. Both cases had proved intractable to all other methods of treatment. Vision has improved greatly in both cases. We plan to continue our present treatment at least until maximum improvement, both subjectively and objectively, is obtained.

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CONTACT DERMATITIS DUE TO MANGO

SAMUEL J. ZAKON, M.D., CHICAGO

CASE 1.—A 29 year old woman presented an acute vesicular dermatitis of three days' duration which involved both lips and a moderately large circumoral area. There was no history of contact with any of the common substances usually responsible for a dermatitis in this location. She stated that two days prior to the onset she received a case of mangoes from her father, who owns a fruit farm in Florida. About twenty-four hours after eating a mango itching developed about her mouth, and her lips began to swell.

Examination revealed an erythematovesicular eruption involving both lips, the chin and both cheeks. The lips were edematous and she had difficulty in opening the mouth. There were no lesions on the mucous membranes of the mouth. The patient stated that she felt nauseated after eating the mangoes. Her past history is irrelevant with the exception that she had had attacks of urticaria after the ingestion of strawberries.

Patch tests performed on the patient's back using mango peel and juice proved that only the peel produced a positive reaction.

CASE 2.—A 19 year old girl presented an acute erythematovesicular eruption of twenty-four hours' duration on the lips, nose, face and neck. There were extreme burning and itching. The patient felt nauseated and complained of a moderate headache. There was no history of contact with any of the materials usually suspected when an eruption involves this area, such as cosmetics, mouth washes or tooth pastes. There was a history of eating a mango twenty-four hours before the onset of the eruption. Other members of the same family who ate mangoes were unaffected.

Examination revealed marked edema about the lips and a dull red erythema studded with discrete vesicles and bullae about the face. The previous history is essentially irrelevant with the exception that six months prior to this attack a dermatitis which was due to dress shields developed in the axillas.

Patch tests with the peel and juice of the fruit produced a positive reaction to the peel and not the juice.

In both cases the condition cleared up within ten days with mild local therapy.

COMMENT

The fruit of the mango has recently become popular as a delicacy in many parts of the United States. According to Kirby-Smith,[1] the peel before ripening contains a substance which affords protection from the attacks of insects. This substance remains so active in some varieties, even after the fruit has ripened, as to affect some people eating the fruit with what is known as "mango poisoning."

The mango belongs to the species Mangifera indica. Its home is believed to be India, Burma and Malaya and it is known as the "apple of the tropics." The fruit varies from oval to S shape, weighing from 8 to 38 ounces. It has a relatively smooth peel with a single large seed and when ripe is usually greenish yellow.

Mango dermatitis as defined by Kirby-Smith [1] is an irritation of the skin and mucous membranes produced in susceptible persons by contact with the resin from the peeling or stem of the fruit or with the sap of the tree. The sites usually affected are the lips, face and hands. Depending on the susceptibility of the individual and the amount of exposure, the lesions vary from mild dermatitis to severe disfiguring edema and even to prostration.

The mango and the poison ivy both belong to the family Anacardiaceae. The dermatitis caused by eating the mango fruit may be compared to that of Rhus venenata.

CONCLUSIONS

An acute vesicular or bullous dermatitis and marked edema about the mouth may be caused by eating mango fruit. With the increasing use of this fruit in the daily diet, the mango should be seriously considered as an etiologic factor in acute dermatitis of the face.

185 North Wabash Avenue.

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Special Clinical Article

THE TREATMENT OF THE PATIENT WITH SEVERE BURNS

CLINICAL LECTURE AT ST. LOUIS SESSION

ROY D. McCLURE, M.D.

DETROIT

In 1937 there were almost 8,000 deaths from fire in the United States. Forty-five per cent of lethal burns are in children under 6 years of age, and in Penberthy's [1] series of 493 cases at the Children's Hospital in Detroit it was found that 80 per cent of these should be considered avoidable. We, as physicians, should take a prominent part in a program of safety education directed toward preventing this needless loss of life.

It is now fifteen years since Davidson [2] began his revolutionary work on burns while he was resident surgeon at the Henry Ford Hospital. This period marked the inception of a method of treatment which many of us believe is the best available at the present time, but more significant was the sudden arousal of interest in the subject of burns among physicians throughout this country and abroad. The number of papers on burns during the ten year period following his original communication was three times that of the preceding ten year period. Many variations in the treatment have been promulgated which, in the hands of their sponsors, show results comparable with the best that prevail today. These variations should not be allowed to confuse the average physician, who in the aggregate cares for the great mass of all burn cases, from meticulous attention to the essential principles of treatment, which I shall attempt to outline.

In view of the careful clinical and experimental work that has been done recently, it is desirable to pause and take stock of the present available information. Answers to the following questions should be sought:

1. Are there any new facts concerning the systemic effects of the chemical and tissue changes which follow severe burns?

From the Department of Surgery of the Henry Ford Hospital.

The author acknowledges the assistance of Dr. C. R. Lam in the preparation of this paper.

Read in the Surgical Division of the General Scientific Meetings at the Ninetieth Annual Session of the American Medical Association, St. Louis, May 16, 1939.

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2. What is the effect on the mortality rate of present methods of treatment?

3. In the light of our present knowledge, what is the best therapeutic procedure in burns?

Research on burns has been largely concentrated on explaining the so-called toxic phase, which appears after eighteen to twenty-four hours. Three theories have arisen:

1. First is the physical, which assumes that there is local leakage of fluids and plasma proteins, with resulting blood concentration and circulatory failure. This has been shown by Underhill,[3] Blalock,[4] and Harkins.[5] At the 1937 session of the French Surgical Congress, where Allen and I [6] reported the experience with tannic acid in this country, the trend was markedly toward the theory of a soluble toxin. All agree on the importance of loss of plasma protein, but it is probably not the lethal factor.

At this time I shall mention the possible role of tissue anoxia in burns. Underhill stated: "Marked concentration of blood means a failing circulation, an inefficient oxygen carrier, oxygen starvation of tissues, fall of temperature, and finally suspension of vital processes." This statement is interesting in view of the recent advances in the knowledge of anoxic lesions produced by barbiturate poisoning, acute alcoholism, anesthetics and other factors, as exemplified by the recent work of Hartman [7] of our staff.

2. Then there is the bacterial theory of Aldrich.[8] At the Johns Hopkins Hospital he took cultures of a large series of burns, and at the end of eighteen hours he found beta hemolytic streptococci in most of them and invariably found these organisms in the blood and burned areas in fatal cases. Aldrich remains the chief proponent of the theory, stating in 1937: [9] "For let me add again, where there is no infection, there is no toxemia." A recent report from Edinburgh [10] casts considerable doubt on Aldrich's theory. This report represents the experience with 200 burns, sixty-five of which were serious. There were twenty autopsies. Careful bacteriologic work was done on the burns with aerobic and anaerobic cultures. Frequently, cultures of representative areas showed no growth up to ninety hours. These authors stated that the evidence was against bacterial infection as the cause of the acute toxemia. "Certainly, there was rarely any evidence that hemolytic streptococci were flourishing in the burned area and invading the blood stream. Moreover, hemolytic streptococci were sometimes grown in pure culture from isolated portions where systemic disturbances were entirely absent."

At the Henry Ford Hospital we have been unable to convince ourselves that bacterial invasion is the significant factor in the early acute toxemia. However, we added an antiseptic, hexyl-chloro-resorcinol, to the tannic acid after the work of Hartman and Schelling [11] showed the efficient bactericidal power of such a combination.

3. The third theory is that a specific toxin is formed at the burned area which is absorbed and distributed by the circulating blood, with the resultant picture of toxemia and collapse. This is the oldest theory, and it came into disrepute when Underhill pointed out the fallacies of certain previous experimental work [12] and produced evidence that there is poor absorption from burned areas. As has already been stated, the toxic theory is regaining favor. Mason and his co-workers [13] noted no difference in the absorption of potassium iodide that was injected subcutaneously into normal tissue or into burned tissue. Mason, who worked with Davidson on the question of tissue autolysis, maintains that "death occurring several days following severe burns is due mainly to the absorption of protein decomposition products." Wilson and his collaborators [14] removed the tissue fluids from edematous burned tissues forty-eight hours after the burn. They found that this fluid had acquired toxic properties and was frequently fatal to healthy animals of the same species. Rosenthal [15] tested the blood of burned pigs, guinea pigs and human beings and found a histamine-like substance, which was first linked with the red cells but was later found in the serum. It differed in several ways from histamine.

PATHOLOGY

The chief addition to our knowledge of the pathology of burns since the early article of Bardeen [16] in 1898 has been the emphasis on the changes in the liver. Marked necrosis of liver cells has been noted in many cases of fatal burns. This lesion was especially impressive in two cases recently under treatment. Two men climbed down into a tank which had been used to store oxygen and began to work with an acetylene torch. Their clothing suddenly burst into flames. They were able to climb out of the tank and fellow workers extinguished the fire. Second and third degree burns were sustained, which amounted to one half of the body surface of one man and one fourth of the other. In spite of intensive treatment, the man with the larger burn died in profound toxemia on the third day. Postmortem examination showed almost total necrosis of liver tissue, shown by microscopic section in the accompanying illustration. The other man showed toxemia to a less marked degree, but the liver became palpable and jaundice appeared, the icterus index rising to 130 units. Large amounts of intravenous dextrose were given to promote regeneration of the liver, with the result that he recovered without disability.

We agree with Wilson,[10] who stated: "In summary, we may say that after death from burns a lesion of the liver cells was found in many cases which was characteristic of this form of injury. Its relation to acute

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10. Wilson, W. C.; MacGregor, A. R., and Stewart, C. P.: The Clinical Course and Pathology of Burns and Scalds Under Modern Methods of Treatment, Brit. J. Surg. **25:** 826-865 (April) 1938.

11. Hartman, F. W., and Schelling, Victor: Effects of Acids on Certain Carbocyclic Antiseptics, Proc. Soc. Exper. Biol. & Med. **33:** 469-471 (Dec.) 1935.

12. Robertson, B., and Boyd, G. L.: The Toxemia of Severe Superficial Burns, J. Lab. & Clin. Med. **9:** 1-14 (Oct.) 1923.

13. Mason, E. C.; Payton, Pearl, and Shoemaker, H. A.: Comparison of the Rate of Absorption from Normal and Burned Tissues, Ann. Int. Med. **9:** 850-853 (Jan.) 1936.

14. Wilson, W. C.; Jeffrey, J. S.; Roxburgh, A. N., and Stewart, C. P.: Toxin Formation in Burned Tissues, Brit. J. Surg. **24:** 601-611 (Jan.) 1937.

15. Rosenthal, S. R.: Toxin of Burns, Ann. Surg. **106:** 111-117 (July) 1937.

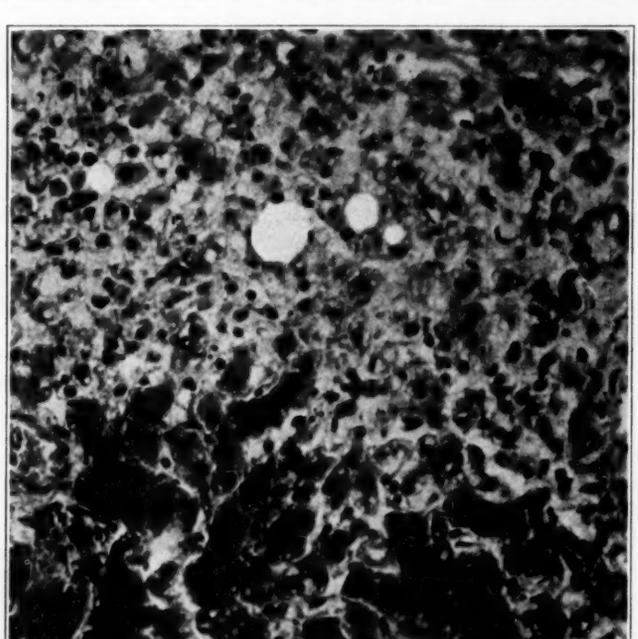
16. Bardeen, C. R.: Review of the Pathology of Superficial Burns, with a Contribution to Our Knowledge of the Pathological Changes in the Organs in Cases of Rapidly Fatal Burns, Johns Hopkins Hosp. Rep. **7:** 137-179, 1898. Since this paper was read, an excellent report on liver necrosis in burns has appeared by T. H. Belt (J. Path. & Bact. **48:** 493-498 [May] 1939).

toxemia was so remarkably close as to leave little doubt that the liver lesion and the acute toxemia were produced by the same mechanism. The responsible agency was certainly not bacterial infection, and in our view the liver lesion furnished the strongest evidence of a nonbacterial toxin circulating during the first few days after a burn." This reservation must, however, be made: these changes may be due to anoxia.

CHEMICAL PATHOLOGY

It is well known that there are changes in the blood chemistry in severe burns. The most constant is blood concentration, as expressed in the hemoglobin determinations and hematocrit readings. However, we have all seen cases in which the hemoglobin content has been kept at a normal level or below by intensive administration of fluid, and yet we have watched such cases proceed to death in a state of toxemia.

Based on her own investigations and those of Dr. Alfred Blalock and Dr. Anne Minot at Vanderbilt University School of Medicine, Dr. Katharine Dodd [17] suggests the great importance of replacing promptly the large amount of circulating protein that is lost in severe burns. This is done by serum transfusions. The mere replacement of water and salt as such will only serve to make matters worse by diluting the concentration of the protein that remains in the blood vessels. If too great a depletion of plasma volume occurs, the blood pressure falls precipitately and fatal shock ensues. It would seem better, therefore, to rely on frequent hemoglobin or hematocrit determinations and measurement of serum protein concentration than to use the systolic blood pressure as a gage of a burned patient's condition.



Section under medium power of liver of burned patient who died on third day after being burned. Extensive necrosis in center of the liver lobule, with a zone of intact liver cells in periphery (lower part of section).

Other blood constituents that show variations from the normal are the chlorides, plasma proteins, carbon dioxide combining power, nonprotein nitrogen, sodium and potassium. There is good evidence to indicate that no one of these factors is a determinant in fatal cases, although further work must be done to evaluate fully the behavior of the basic ions. Nevertheless, measures to restore the blood chemistry to normal should be carried out in order that the burned patient may be given all possible assistance during the early critical days.

17. Personal communication to the author.

MORTALITY STATISTICS

In 1935 Allen and I [18] reported the status of burns after ten years' use of Davidson's method. We called attention to the fact that the Bureau of Census mortality statistics for the United States registration area showed a decrease in 1933 from the previous high figures. In 1928 there were 8,083 deaths from burns (the highest during the decade) and in 1933 there were 5,232 deaths. I regret to report that in the succeeding four years there has been no further reduction.[19]

The figures in the accompanying table are difficult to reconcile with the reports of the lowered mortality rates which come from various institutions. In our paper Allen and I showed a table which indicated the reduction in mortality in several centers. To this may be added the report of Mitchiner.[20] At the St. Thomas Hospital, London, there was a mortality of 15.5 per cent in the period 1924-1928 when picric acid was used, and a mortality of 4 per cent in the period 1929-1936 when the Davidson method was used. The mortality from scalds was reduced from 7.5 per cent to 1.7 per cent. At the Children's Hospital in Toronto Harris [21] noted a fall in the death rate from 26.6 per cent to 12 per cent, and Herzfeld,[22] at the Royal Edinburgh Hospital for Children, had a reduction of 38 per cent to 9 per cent.

In evaluating the Davidson treatment, in addition to the mortality statistics, one should consider the economic factor of great saving in amount of dressings, shorter stay in the hospital as well as the relief of pain, and the diminution of scarring and gross deformities.

TREATMENT

In the management of a severe burn, two fundamental principles must be observed. These are the prevention or treatment of shock and the carrying out of scrupulous aseptic technic in the local treatment of the burned area, which should be regarded as a large open surgical wound. The advent of the tannic acid treatment of burns was so revolutionary in character and its immediate effects so dramatic that attention has been focused on local applications alone, while the auxiliary treatment of shock has too often been neglected. This state of affairs can be explained by the fact that, except in the larger cities, the opportunity to treat severe burns is rarely presented to the practitioner. In the United States in 1937 alone there were 5,466 deaths from burns. If these cases were equally distributed among the 130,000 practicing physicians, each would have had under his care only one fatal case in more than twenty-three years of practice, and if the mortality should be placed at 20 per cent, this would mean that, on the average, each physician would treat one patient with severe burns every four and one half years. It is not surprising, therefore, that the average physician is not familiar with all the details of treatment. For his benefit, the following summary of treatment is inserted:

18. McClure, R. D., and Allen, C. I.: Davidson Tannic Acid Treatment of Burns: Ten Year Results, Am. J. Surg. **28**: 370-388 (May) 1935.

19. United States Bureau of the Census, Vital Statistics, Special Reports **7**: 77 (March 20) 1939.

20. Mitchiner, P. H.: Treatment of Burns and Scalds, Brit. M. J. **1**: 27-30 (Jan.) 1938.

21. Harris, quoted by Martin, D. D.: Clinical and Experimental Studies of Burns, J. M. A. Georgia **27**: 39-46 (Feb.) 1938.

22. Herzfeld, Gertrude: Treatment of Burns and Scalds by Tannic Acid, Practitioner **122**: 106-111 (Feb.) 1929.

TREATMENT OF BURNS—HENRY FORD HOSPITAL METHOD

It is important to bear in mind the necessity of treating the patient as well as the wounds. Treatment naturally resolves itself into three phases: supportive measures, local treatment of the burned areas, and after-care.

General Supportive Measures.—These are largely directed toward the control of symptoms.

1. Pain and restlessness are combated by adequate and repeated sedation.

2. Oxygen therapy may be indicated in certain severe cases.

3. External heat is applied: hot water bottles and blankets if the burned area is limited; in extensive burns, the electrically heated cradle tent and superheated room.

4. Restoration of fluid balance is undertaken. The aim of fluid administration should be to obtain a twenty-four hour urinary output of 1,500 cc. Fluids are given by mouth if tolerated, by rectum, interstitially and intravenously. The continuous intravenous method is often indicated and may be imperative in cases of extensive burns involving the extremities. The solutions used are 5 per cent dextrose and physiologic solution of sodium chloride.

Deaths from Burns, 1933-1937 [19]

Year	Deaths from Burns*
1933	5,232
1934	5,758
1935	5,687
1936	5,971
1937	5,466

*These figures exclude deaths classified as due to conflagration, where suffocation or cremation may have occurred, and those due to special accidents, such as mine accidents. In 1937 there were 1,688 deaths due to conflagration and 774 deaths from special accidents, a total of 7,928 deaths by fire.

5. Blood plasma transfusions are done. Whole blood should be used only when blood concentration is normal, as indicated by repeated hemoglobin or hematocrit determinations. When hemoglobin values of more than 15.6 Gm. are obtained, plasma transfusions should be given.

6. Laboratory investigations are made:

(*a*) Frequent hemoglobin or hematocrit determinations should be made.

(*b*) The urine should be analyzed frequently, with determinations of the specific gravity and albumin content.

(*c*) Serum protein determination should be made immediately on admission.

When facilities are available, the following procedures should be done:

(*d*) Chloride estimations should be made at intervals so that depleted chlorides may be restored by intravenous administration of saline solution.

(*e*) Blood cultures may be taken.

(*f*) The nonprotein nitrogen should be determined.

(*g*) The icterus index should be ascertained as a means of recognizing toxic hepatitis or liver damage.

Local Treatment.—1. Remove all clothing under as sterile conditions as possible and place the patient on sterile sheets in a warm room.

2. Take all precautions to avoid infection of the burned area. Treat it just as any other large wound. All dressings and applications must be done under aseptic conditions—masks, gloves and gowns must be worn by doctors and nurses.

3. Débridement should be minimal and should be limited to opening blisters and cutting away dead skin.

4. Tannic acid in a 5 per cent fresh solution is applied with an atomizer or power spray. This is a simple and effective way of tanning the burned area. This solution is sprayed on at frequent intervals until the burned area is thoroughly tanned. Ointments containing tannic acid plus an antiseptic are useful in small burns and for burns of the face and the perineum. The addition of antiseptics such as resorcinol or silver nitrate to the tannic acid with the idea of preventing infection has been employed with apparent success, but treating the burned area as a surgical open wound by taking steps to prevent the introduction of infecting organisms is an equally, if not more, effective measure.

After-Care.—1. Cut away all dead skin and open collections of fluids under aseptic precautions and then again spray tannic acid on the bared areas.

2. As the heavy tanned crust forms, watch carefully for local signs of infection under the crust and liberate collections of pus. Occasionally the first clue to these collections is evidence of systemic reaction.

3. Prevent contracture deformities by the early use of extension apparatus.

4. Employ skin grafting early and freely.

5. Detect and treat secondary anemia early. Blood transfusion is the best method of doing this in the late stages.

COMMENT

We have continued to advocate the use of tannic acid in the local treatment of the skin. Variations in the technic have been successful.[23] Other eschar-forming chemicals, such as gentian violet and silver nitrate, have given satisfactory results. The advantages claimed are that the coagulum forms more quickly and is thinner and more pliable than that produced by tannic acid. Bettman [24] has had excellent results with a combined tannic acid-silver nitrate treatment. He believes that the combination is superior to tannic acid alone, and his experience would tend to bear out this contention. He attributes the improvement to the increased antiseptic qualities of the mixture and to the fact that the coagulum is produced without delay. We have found that the tannic acid may be conveniently applied to the medium of a water-soluble jelly to which has been added an antiseptic of the resorcinol group.

SUMMARY

The original theory that a toxin is formed in the burned area, from which it is absorbed and carried by the circulation throughout the body, with the production of systemic effects has not yet been settled. In spite of excellent results being obtained in many centers, the death rate in the United States seems to have reached a plateau far above that lower level which is possible with our present knowledge. Disagreements regarding the proper local treatment should not distract our attention from the more important problem—the treatment of a very sick patient who has a threatening toxemia, alterations in the blood chemistry, a wound very sus-

23. Fantus, Bernard, and Dyniewicz, H. A.: Compound Solution of Tannic Acid, J. A. M. A. **109:** 200-203 (July) 1937. Gunn, John, and Hillsman, J. A.: Thermal Burns, Ann. Surg. **102:** 429-445 (Sept.) 1935.

24. Bettman, A. G.: Nationale of Tannic Acid-Silver Nitrate Treatment of Burns, J. A. M. A. **108:** 1490-1494 (May 1) 1937.

ceptible to infection and pathologic changes in organs remote from the skin. The greatest good can, of course, come through preventing burns from occurring, and I believe that the family physician, through his teaching in the home, can accomplish more than any other agency in this respect.

Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT. HOWARD A. CARTER, SECRETARY.

CLARK DUPLEX INHALATOR ACCEPTABLE

Manufacturer: Physician's Oxygen and Supply Company, Inc., 1390 Eastern Parkway, Brooklyn.

The Clark Duplex Inhalator is designed to supply a mixture of carbon dioxide and oxygen for resuscitation of victims of gas poisoning, smoke poisoning, drowning and other conditions requiring resuscitation. It provides two cylinders with attachments for using the inhalator on two patients simultaneously. In case the supply from the small cylinders proves insufficient for longer periods of operation, a larger size tank may be attached by a third connection. The unit with cylinders weighs 47 pounds out of the case and 62 pounds when weighed with the case. The outside dimensions of the case are 25½ inches long, 13 inches high and 9¼ inches deep.

One cylinder contains a 7 per cent and the other a 5 per cent carbon dioxide mixture with oxygen. The change of administration from 7 per cent to 5 per cent or vice versa depends simply on the opening and closing of one or the other cylinder valve. The cylinders are of 16 cubic feet capacity and deliver upward of 75 liters of gas per minute each. The firm also supplies cylinders of 110 cubic feet capacity if desired.

Clark Duplex Inhalator.

The apparatus was investigated by the Council. It was found that the cylinder attachment ports are provided with check valves which prevent leakage from a cylinder in use during removal of an empty cylinder or cause equalization in pressure between two cylinders if the two are open at the same time. These valves have been tested and found to function as intended. Gas from the cylinders passes through a reducing valve. This valve is set by the maker to reduce pressure to one of about 65 pounds per square inch. A gage reading to 3,000 pounds per square inch is provided for checking the content of cylinders. The reducing valve is provided with two safety devices to prevent the building up of dangerous pressures in case of failure of its normal mechanism: (1) In the heavy bronze casing of the reducing valve there is a small frangible disk which will rupture at a pressure of about 500 pounds per square inch and (2), should this fail to break at this pressure, the thin metal bellows, which normally operates the reducing valve by its collapse and expansion, will rupture and allow the gas to escape through an aperture plug.

If there should be a continuous free flow of oxygen from the two cylinders at once, there would result a rapid emptying of these small portable cylinders. The features peculiar to this device are largely directed toward effecting oxygen economy, however. Directly below the reducing valve is a large rubber bag, called by the makers a "breathing bag." This is in no sense a rebreathing bag. Inside this bag is a vertical lever the long arm of which is connected to the middle of the bag. The short arm operates a valve which admits oxygen from the low pressure side of the reducing valve to this rubber bag. When the bag fills to a predetermined volume the movement of the lever closes the valve. Since no great pressure is required to distend the bag to this extent, the bag virtually functions as a second sensitive reducing valve and reservoir from which the patient or patients breathe the gas. From this point on, the equipment is in duplicate.

There is a valve delicately balanced against a spiral hair spring which is opened by the small pressure within the rubber bag as soon as the pressure within the face mask and breathing tube is reduced slightly below atmospheric pressure by an inspiratory effort of the patient or by the corresponding part of the cycle of artificial respiration. The stem of this valve is geared to an indicating needle, which moves over a dial and indicates the depth of respiration. These devices were tested in a laboratory in duplicate and found to operate satisfactorily. The face masks are provided with inflatable soft rubber edges for effecting gas-tight contact with the face and provided with elastic holding bands. The metal connection for attaching the corrugated rubber breathing tube carries the exhalation valve. A careful test was made to determine whether powerful exhalation would force any appreciable quantity of exhaled air into the rubber bag. It was found that practically all of the air escaped through the exit valve at the mouthpiece. When used as described, oxygen is fed into the mouthpiece only when the valve which actuates the breathing depth indicator is operated by inspiratory efforts. A lever at the side of the depth-of-breathing indicator case may be turned up, leaving this valve fully open. Oxygen then flows freely to the mouthpiece, and the indicator needle remains fully deflected. Oxygen in excess of that breathed escapes by the mouthpiece exit valve.

In view of the foregoing report, the Council on Physical Therapy voted to accept the Clark Duplex Inhalator for inclusion in its list of accepted devices.

Council on Pharmacy and Chemistry

REPORTS OF THE COUNCIL

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORTS. PAUL NICHOLAS LEECH, Secretary.

AMPOULES SODIUM CACODYLATE INTRAVENOUS-UPJOHN, 0.45 Gm. (7 grains), 5 cc., and AMPOULES SODIUM CACODYLATE INTRAVENOUS-UPJOHN, 1 Gm. (15½ grains), 10 cc., NOT ACCEPTABLE FOR N. N. R.

The Upjohn Company presented these ampules of sodium cacodylate (among others) for consideration as to inclusion in New and Nonofficial Remedies. From the names on these packages it is apparent that they are for intravenous use. The Council holds that the desired effects of sodium cacodylate may be achieved by oral administration of the drug or, in exceptional cases, that the intramuscular route may be desirable. The Council has on other occasions pronounced similar dosage forms unacceptable (THE JOURNAL, May 7, 1932, p. 1654; Dec. 23, 1933, p. 2050).

The Council was therefore obliged to hold Ampoules Sodium Cacodylate Intravenous-Upjohn, 0.45 Gm. (7 grains), 5 cc., and Ampoules Sodium Cacodylate Intravenous-Upjohn, 1 Gm. (15½ grains), 10 cc., not acceptable for inclusion in New and Nonofficial Remedies. This does not apply to Ampoules Sodium Cacodylate-Upjohn for intramuscular use.

DIMENFORMON AND DIMENFORMON BENZOATE (ROCHE-ORGANON, INC.) NOT ACCEPTABLE FOR N. N. R.

Dimenformon (Estradiol) and Dimenformon Benzoate (Estradiol Benzoate) of Roche-Organon, Inc., are partially synthesized products which are claimed to be effective estrogens. It is not the purpose of this report to criticize the quality of Roche-Organon estrogenic products, but exception is taken to the unethical and undesirable advertising methods used in the promotion of these estrogens to the physician. In a recently distributed circular on "Effective Estrogenic Therapy" there are listed about thirty or more "indications" for estrogenic therapy with Dimenformon and Dimenformon Benzoate "based on a very careful study of published clinical data augmented by private clinical

reports." Among the conditions for which the firm recommends estrogen therapy based on "very careful study" are leg ulcers, Buerger's disease, polyarthritis, certain ocular diseases and other disorders which have little or no endocrine relationship.

Physicians, even those having no special knowledge of the endocrines, may readily recognize the lack of scientific evidence for these therapeutic claims, and a detailed discussion of these recommendations would therefore be superfluous.

Other disorders, however, which bear some relation to the endocrine glands are being exploited by Roche-Organon (and other pharmaceutic houses) in a more subtle manner. For instance, estrogenic therapy of menstrual disorders has been the subject of considerable experimental work ever since the estrogens have been made available clinically. Except for the conditions of menopause (artificial or spontaneous) little progress has been made in the effective treatment of such disorders. Many of the reports on the clinical experimental use of estrogens have been unscientific and worthless; others demonstrate results which raise doubts as to their reliability. Many of the claims advanced by Roche-Organon appear to be based on such uncontrolled and unconfirmed reports.

Physicians well realize that the physiology of menstruation is at present only partially understood. It is true that uterine bleeding can be induced in the castrate by means of estrogens, but there are certain features of spontaneous normal menstruation which are subject to speculation and have not been satisfactorily explained as yet. It is no wonder, therefore, that disorders of menstruation are even less well understood. Functional dysmenorrhea, for example, has no established etiologic factor in most instances, despite the numerous theories concerning the role of the absence of corpus luteum, excess of estrogen, infantile uterus or neurogenic disorder. There are probably several types of dysmenorrhea and the outright recommendation that estrogens are of value in dysmenorrhea, in general, indicates a lack of understanding of this problem. Many factors, doubtless, are involved in the etiology of functional menorrhagia. The fact that excess bleeding can occur in the presence of a hyperplastic secretory or a resting endometrium is evidence of the different types of ovarian function associated with this condition. Similarly, amenorrhea may occur with either resting, hyperplastic or secretory endometrium, illustrating again the multiplicity of phases of ovarian activity associated with menstrual disorders. On the face of the matter, therefore, it is highly unreasonable to believe that one substance (estrogen) can alleviate or cure menstrual disorders ranging widely from amenorrhea to menorrhagia, including dysmenorrhea.

Other conditions for which estrogens have been advocated after the "careful studies" of Roche-Organon are on an even less sound basis. Toxemias of pregnancy, mastopathies, prematurity in infants, migraine and pituitary dysfunctions have all received one or more trials with estrogens. There is a definite lack of adequate confirmatory evidence in most of these reports. The rationale for estrogenic therapy here is usually quite flimsy, based mainly on assumption and imagination. The exercising of even mild discrimination would at least result in the acknowledgment that estrogenic therapy in these conditions is still mainly experimental.

The uncritical attitude of this firm is characterized by some of the statements appearing in its advertising matter. Thus, estrogens are suggested for the treatment of primary amenorrhea "of uncertain origin" and vaginitis of "non-specific" etiology occurring in children (!) Such a recommendation implies, in effect, that one is justified in prescribing treatment (estrogenic) when in doubt.

Matching the boldness of the suggestions for estrogenic therapy is the advice on the actual treatment of these conditions. In columns adjoining the recommended indications, the exact dosage of hypodermic and oral estrogens and any auxiliary treatment recommended is stated. The presence of printed figures on dosage gives an air of undisputed authority and finality to the recommendations. It would be interesting to learn of the sources from which the data were obtained. Especially valuable would be the firm's references on oral therapy since the reports in the scientific literature are relatively few. Not only should the accuracy of the information be challenged, but the physician should resent the aggressiveness of this firm in advertising in detail so-called instructions in a field of therapy which is as controversial and unsettled as the one in question. Reliable information of this nature may be found by consulting scientific publications, and the usurpation of their function by commercially minded institutions should not be condoned.

Too much has already been made of the mysteries of endocrinology. It would be safe to say that the so-called mysteries and complexities are merely reflections of our present lack of knowledge of glandular physiology and therapy. Such a condition usually results when it is attempted to explain many phenomena on the basis of few facts. Much of our uncertainty has arisen from the discrepancies and unreliability of some of the endocrine literature. The result has been confusion and misunderstanding. Some of the manufacturers of pharmaceuticals have not been unaware of this state and undoubtedly have profited much from it. The advertisement "Effective Estrogenic Therapy" (Roche-Organon) is a clear example of the meretricious appeal to those physicians who are in no position to evaluate the recently expanded endocrine literature.

The Council voted that Dimenformon and Dimenformon Benzoate (Roche-Organon, Inc.) be declared unacceptable for inclusion in New and Nonofficial Remedies because of the exaggerated and unwarranted advertising claims with which they are marketed.

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

PAUL NICHOLAS LEECH, Secretary.

RACÉPHEDRINE.—Racemic Ephedrine.—d-l-Ephedrine.—$C_{10}H_{15}ON$.—d-l-γ-hydroxy, β-methylamine phenyl propane.

Actions and Uses.—The same as those of l-ephedrine.

Dosage.—From 30 to 50 mg.

Racephedrine is a colorless, crystalline substance. The melting point of the free base is 79 (microscopic heating stage). It is readily soluble in water, alcohol and ether. Weigh out, accurately, 0.2 Gm. of racephedrine and transfer to a desiccator over phosphorus pentoxide for fifteen hours at room temperature: the loss of moisture is not more than 0.5 per cent. Incinerate 0.1 Gm. of racephedrine, accurately weighed, and previously dried to constant weight: no residue remains. Dissolve approximately 0.5 Gm. of racephedrine in 20 cc. of water: the aqueous solution does not show optical activity and does not give the U. S. P. XI chloride or sulfate test.

For further identification see under racephedrine hydrochloride (THE JOURNAL, April 1, 1939, p. 1257).

Transfer 0.25 Gm. of racephedrine, accurately weighed, and previously dried over phosphorus pentoxide for five hours at room temperature, to a beaker. Add 10 cc. of distilled water and titrate with 0.1 normal sulfuric acid in a slight excess, using methyl red as indicator. Back-titrate with 0.1 normal sodium hydroxide. Each cubic centimeter of 0.1 normal sulfuric acid is equivalent to 0.01651 Gm. of anhydrous racephedrine.

Racephedrine-Gane's Chemical Works, Inc.—A brand of racephedrine-N. N. R.

Manufactured by Gane's Chemical Works, Inc., New York. No U. S. patent or trademark.

RACEPHEDRINE SULFATE.—Racemic Ephedrine sulfate.—$C_{10}H_{15}ON.H_2SO_4$.

Actions and Uses.—The same as those of l-ephedrine sulfate.

Dosage.—From 30 to 50 mg.

Racephedrine sulfate is a colorless, crystalline substance. The melting point is 247 C. (microscopic heating stage). The solubility is fair in water and alcohol. Dissolve 0.5 Gm. in 25 cc. of distilled water. The aqueous solution is neutral to litmus and does not show optical activity. The U. S. P. XI test for chloride is also negative. Weigh out accurately 0.25 Gm. of racephedrine sulfate and dry to constant weight over sulfuric acid in a desiccator at room temperature; the loss is not more than 2 per cent of its weight; 0.25 Gm. of racephedrine sulfate has a negligible ash residue. The assay for anhydrous racephedrine, as described in racephedrine hydrochloride, is not more than 77.5 per cent nor less than 75.5 per cent.

Racephedrine Sulfate-Gane's Chemical Works, Inc.—A brand of racephedrine sulfate-N. N. R.

Manufactured by Gane's Chemical Works, Inc., New York. No U. S. patent or trademark.

SUPRARENIN (See New and Nonofficial Remedies, 1938, p. 232).

The following dosage form has been accepted:

Tablets Suprarenin, 0.02 Gm.: Each tablet contains suprarenin bitartrate 0.0364 Gm., equivalent to suprarenin 0.02 Gm., with lactose 0.0385 Gm., and acetone sodium bisulfite not more than 0.0001 Gm.

Prepared by Winthrop Chemical Co., Inc., New York, N. Y.

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SATURDAY, NOVEMBER 11, 1939

THE PLUMMER-VINSON SYNDROME AND CANCER

The Plummer-Vinson syndrome, which appears to occur mostly if not exclusively in women, is characterized by hypochromic anemia, with or without achlorhydria, dysphagia and chronic inflammatory and atrophic changes in the mouth, pharynx and upper end of the esophagus. According to the observations of Ahlbom [1] at Radiumhemmet in Stockholm the syndrome brings with it a special liability to cancer in those structures. As a rule the afflicted women are poorly developed and poorly nourished; weakness and anemia may have existed for years, the first symptoms commonly appearing at the ages of from 18 to 20; sometimes anemia, sometimes dysphagia is the more prominent; in the milder forms the dysphagia may be missed easily by the clinician. All observers agree that, while liver preparations are without curative effect, iron in large doses leads to improvement, even to apparently complete recovery; only too frequently the anemia returns and the dysphagia may become more or less continuous for years. Such patients eat slowly and swallow only a little at a time; occasionally only liquids can be swallowed; there may be choking spells due to spasm. In addition to the anemia and dysphagia there develop, as is true also in some degree in pernicious anemia, chronic inflammatory and atrophic changes in the lips, the tongue and the buccal and pharyngeal mucous membranes as well as in the upper part of the esophagus, the entrance to which is narrowed. These membranes become dry and inelastic, the tongue smooth and glazed, the lips thinned, stiff and cracked at the corners, the face gradually taking on a characteristic change. Early loss of teeth is common. Buccal leukoplakia may develop and the nails may turn spoon shaped (koilonychia). In about one fourth of the cases the spleen has been found to be enlarged: No systematic studies appear to have been made of the blood chemistry, the metabolism or the structural changes in cases of the syndrome. In a case in which death occurred from puncture of the esophagus by a filiform bougie, Suzman [2] found hyperkeratinization of the oropharyngeal mucosa, lymphoid infiltration in the submucosa and atrophy of the muscular coat—changes currently regarded as "precancerous." The real nature and cause of the Plummer-Vinson syndrome or disease are not known; all observers agree that it concerns a nutritional deficiency or imbalance in which the lack of iron plays a part of fundamental importance as indicated by its curative action, but no deeper studies appear to have been made into the genesis of the condition. The limitation of the disease to women suggests that it is connected in some way with functions, endocrine and otherwise, peculiar to women.

The occurrence occasionally of cancer in women suffering from the Plummer-Vinson syndrome has been noted by several observers.[2] On the basis of a study of the rich clinical material at Radiumhemmet, Ahlbom has shown that there is a definite relation of the syndrome to cancer. The first two instances observed suggestive of such a relation concerned multiple squamous cell cancer of the cheek in women who had had Plummer-Vinson symptoms for years. It soon became quite clear that a high percentage of the women with squamous cell cancer of the mouth, pharynx and upper part of the esophagus had had anemia and dysphagia. Exact final figures are not yet available, but of ninety-four cases studied with particular reference to the Plummer-Vinson syndrome during 1931-1935 the outcome was positive in fifty-seven instances (60 per cent). The relatively greater frequency than elsewhere [3] of oral and pharyngeal cancer, and especially of postcricoid cancer, in women among the patients at Radiumhemmet is of course also significant. Ahlbom [1] states that in Radiumhemmet 90 per cent of the cases of postcricoid cancer occurred in women and that of these women 90 per cent reported a record like that of the Plummer-Vinson syndrome. There is every reason to look forward with special interest to the results of further study. The indications are that in Sweden at least the Plummer-Vinson syndrome in women is a highly important predisposing factor to cancer in the mouth, the pharynx and the upper part of the esophagus. How is it elsewhere? It is noteworthy that there seems to have been uncovered an apparently preventable malnutritional condition that greatly favors the development of cancer. Early diagnosis of the condition with prompt and effective treatment, curative and preventive, is needed in order to forestall cancer, the foundations for which may be laid long in advance of its appearance.

1. Ahlbom, Hugo E.: Anemia, Glossitis and Dysphagia (Plummer-Vinson's Syndrome) in Anamnesis of Women with Cancer of Oral Cavity, Nord. med. tidskr. **11:** 171 (Jan 31) 1936; Simple Achlorhydric Anemia, Plummer-Vinson Syndrome, and Carcinoma of Mouth, Pharynx and Oesophagus in Women, Brit. M. J. **2:** 331 (Aug. 15) 1936.

2. Suzman, M. M.: Syndrome of Anemia, Glossitis and Dysphagia, Arch. Int. Med. **51:** 1 (Jan.) 1933. Kelly, A. B.: J. Laryng. & Otol. **34:** 285 (Aug.) 1919; **42:** 221 (April) 1927. Turner, A. L., ibid. **28:** 281, 1913; **35:** 34 (Feb.) 1920. Cameron, J. A. M., ibid. **44:** 168, 1929. Laub, R.: Acta oto-laryng. **26:** 668, 1938.

3. Cutler, Max, and Buschke, Franz: Cancer: Its Diagnosis and Treatment, Philadelphia, W. B. Saunders Company, 1938, p. 181.

CRITICAL CREOSOTE CRITERIA

A recent Report of the Council on Pharmacy and Chemistry of the American Medical Association [1] indicated that creosote and its allied preparations have received more promotion and widespread application in the past than is warranted by the available pharmacologic evidence. The Council found little published scientific evidence to substantiate claims of some drug firms for the value of these compounds in the treatment of various pulmonary conditions. Before reaching a final decision the Council sent a questionnaire to members of the Association of American Physicians and the American Pediatric Society. The result of this survey confirmed the Council's conclusions and indicated that such drugs are rarely employed by leaders in the profession and that their rationale is little understood by those who do employ them. The Council omitted all such preparations from New and Nonofficial Remedies because they are marketed without satisfactory evidence that they have sufficient therapeutic value and their use is based entirely on empiricism.

Fellows,[2] who previously reported three studies of a series now reports a critical study of the effect of orally administered calcium creosotate on the twenty-four hour sputum of patients with pulmonary tuberculosis. This author indicates that the purpose of his fourth investigation was to determine whether or not any modification of twenty-four hour sputum specimens could be demonstrated during a period of calcium creosotate administration. To accomplish this the author measured the volatile phenol content and the volume of these specimens in a total of fifty-six cases showing similar degrees of lung change. Approximately half of these were used as controls to compare with the patients who received the drug. In spite of the fact that estimations of the volatile phenols excreted in the urine of patients who received the highest oral doses of the drug indicated adequate absorption, significant change in either the sputum phenols or sputum volumes was not observed in any of the cases during the period of calcium creosotate administration. In one group not more than two 0.26 Gm. tablets three times a day could be given because of nausea after administration for a period of one month. In another group the majority of patients tolerated doses as high as four tablets three times a day for a period of five months.

The author emphasizes the conclusiveness of his observations because of the large doses administered to many of the patients. Significantly an equal number of patients were unable to tolerate such large doses for a shorter period, which further emphasizes the uselessness of the employment of such treatment in pulmonary disorders on the basis that an appreciable phenol concentration in the lungs is produced. The author's failure to find evidence of excretion of phenols in the sputum of patients who received calcium creosotate suggested the necessity of investigating expired air of animals given the drug. Observations on six rabbits revealed that phenolic material was not present in their expired air during a period of eight to eighteen hours after each animal had been given 0.5 Gm. of water-soluble calcium creosotate phenols by stomach tube.

The results of the entire study not only invalidate the reports of other workers who attempted to establish a rationale for creosote compounds in pulmonary disorders on the basis of change in the expired air during administration of such drugs but also disprove previous claims for symptomatic relief because of the increase in expectoration and appetite or lessening of cough. The author selected tuberculous patients for the study only because such cases provide a more constant daily output of sputum, whereas in most bronchial diseases the daily variation in volume of sputum is so great that it is impossible to conduct reliable control studies. The absence of adequate controls probably explains many of the statements in the literature concerning the changes in volume of sputum after creosote. Such statements appear to be the result of isolated observations on persons who might have shown the same changes without the drug.

1. Creosote and Guaiacol Compounds Omitted from N. N. R., J. A. M. A. **110**: 209 (Jan. 15) 1938.

2. Fellows, E. J.: Studies on Calcium Creosotate: IV. Observations on Its Use in Pulmonary Tuberculosis, Am. J. M. Sc. **197**: 683 (May) 1939. (These studies were conducted under a grant from the Maltbie Chemical Co., Newark, N. J.)

BACTERIA, THE SMALLEST OF LIVING THINGS

The famous paper of the plant physiologist Ferdinand Cohn entitled "Bacteria, the Smallest of Living Things" introduced scientific bacteriology; it was first published in Berlin, Germany, in 1872 and has just been issued in an English translation in the *Bulletin of the History of Medicine* and as a separate reprint.[1] Morris C. Leikind has added an informative and interesting preface. The paper was translated in 1881 by Charles S. Dolley, who, by the way, spent several years as a student in Europe, at the university in Leipzig and at the zoological station in Naples. Dolley, while yet a medical student at the University of Pennsylvania, read Cohn's paper in the original German. Recognizing at once its importance for the entire field of biology and bacteriology, he published the translation which is the basis of this new edition.

Cohn's systematic investigations of the life of the microbe world began in 1851. The basis of systematic bacteriology even today is his classification of plant micro-organisms named according to their forms: cocci, bacteria, bacilli, vibrios, spirilla and spirochetes. His discovery of spores, that form of bacteria which continues to live even after life for the bacterium proper

1. Baltimore, Johns Hopkins Press, 1939.

has become impossible, is one of the most important experimental observations in the field of plant physiology.

Bacteriology cannot be regarded merely as a branch of medical science. The discovery of the pathogenic germs, chiefly due to Pasteur and Koch, was important for the science of pathology and especially for the study of infectious diseases; but the number of those bacteria which play a part as agents of diseases and have become commonly known is relatively insignificant in the total kingdom of microbes. Where there are fifty or a hundred bacterial agents of human and animal diseases there are thousands of different species in the microbe world. Great biologic importance is due to bacteria and related fungi, which play a decisive part in the decomposition of organic matter; i. e. in decay and putrefaction of dead plant and animal bodies, in fermentation and normal digestion, in the loosening of the soil, in the aggregation of nitrogen in the roots of certain plants, in the reduction of sulfur, also an indispensable element for life, and in numerous other biologic processes. Cohn's classic paper is still important today because he, "like nobody before or after him," as the present editor remarks in his preface, "has so brilliantly and clearly indicated the position of bacteria in the general economy of nature." Cohn describes the eternal circle of organic life. His essay is just as well worth reading today as when it was first published in 1872; it is not really antiquated in essentials. Thus he writes, according to his English translator (page 25 of the new edition):

> The whole arrangement of nature is based on this, that the body in which life has been extinguished succumbs to dissolution in order that its material may become again serviceable to new life. If the amount of material which can be molded into living beings is limited on the earth, the same particles of material must ever be converted from dead into living bodies in an eternal circle; if the wandering of the soul be a myth, the wandering of matter is a scientific fact. If there were no bacteria, the material embodied in animals and plants of one generation would after their decease remain bound, as are the chemical combinations in the rocks; new life could not develop, because there would be a lack of body material. Since bacteria cause the dead body to come to the earth in rapid putrefaction, they alone cause the springing forth of new life and therefore make the continuance of living creatures possible. The wonderful fact that putrefaction is a work performed by bacteria does not stand alone; there is an entire series of chemical changes which are produced by bacteria and similar microscopic forms. These processes are usually designated as fermentation phenomena, and the organisms which cause the same as fermentation fungi.

Ferdinand Cohn, director of the plant-physiologic institute at the university of Breslau, aroused special interest in medical history in still another way. That was his meeting with Robert Koch. When Cohn published his paper on "Bacteria, the Smallest of Living Things," in 1872 Koch was still completely unknown. In 1876, when Koch demonstrated his discovery of the life cycle of anthrax bacilli, he was still a simple country doctor and he presented himself and his work to Cohn. From the blood of infected animals Koch had been able to grow these bacilli in pure culture and had been first to prove experimentally the significance of anthrax spores. These resistant spores become mature bacilli. With the pure cultivated germs Koch was able to produce real anthrax or splenic fever in the bodies of susceptible animals. That important discovery was the first of Koch's great accomplishments in the etiology of infectious diseases. The memorable demonstration began on April 30, 1876, and lasted for three days. "Koch completely convinced his audience of his discovery, and Cohn's enthusiasm was boundless."

Ferdinand Cohn tried at once to remove all obstacles from Koch's way. He not only published in his own periodical (*Beiträge zur Biologie der Pflanzen*, 1876) the paper, fundamental for medical bacteriology, but also did his best to secure for Koch an adequate position in Berlin. Thus the botanist Ferdinand Cohn prepared the way for the medical man Robert Koch. The aging Virchow, then president of the Berlin Medical Society, met the young investigator and colleague with the greatest skepticism. This went so far that in 1882 Koch was not permitted to deliver before the medical society his lecture on the Etiology of Tuberculosis, a lecture which later became world famous. Ferdinand Cohn was free from the malevolent jealousy which has unfortunately played a part in scientific competiton among important scholars. Cohn's own work was fundamental as the basis of scientific bacteriology. The republication of this classic paper (in the original English translation) is most commendable.

Current Comment

AMERICAN DOCTORS ON POSTAGE STAMPS

Last year THE JOURNAL[1] called attention to the disparity between the number of physicians in other countries who had been honored by special issues of postage stamps and the number so honored in the United States. Now the United States Postoffice Department announces a famous American series of postage stamps which will soon be issued. Among some thirty Americans to be thus memorialized are two physicians, Major Walter Reed of the U. S. Army Medical Corps and Dr. Crawford W. Long of Georgia. Although other names might well have been added to this brief list, no one will deny that the two selected fully merit this honor. Our Eastern shores and many of our cities were invaded some ninety-five times by yellow fever before Drs. Reed, Carroll, Agramonte and Lazear conducted experiments in Cuba which demonstrated that yellow fever is transmitted by the bites of certain species of mosquitoes. Yellow fever had been present in the Western hemisphere for at least 300 years and had caused tens of thousands of deaths. Following this discovery by Walter Reed and his associates in 1900, yellow fever soon disappeared from North America and has never returned. Dr. Craw-

1. Medical Portraits on Stamps, J. A. M. A. **111:** 536 (Aug. 6) 1938.

ford W. Long, a general practitioner of medicine, on March 30, 1842, first used sulfuric ether as an anesthetic during the performance of a surgical operation. Dr. Long performed this operation on James M. Venable in Jefferson, Jackson County, Ga., a small town then many miles from a railroad. The general practitioner of medicine and the army medical officer thus memorialized typify the benevolent character of the service which physicians give to suffering humanity.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

ALABAMA

Changes in Health Officers.—Dr. Walter J. Broad, Montgomery, has been appointed health officer of Bullock County, succeeding Dr. Hubert R. Owen, Union Springs, who resigned to do postgraduate work at the University of Pennsylvania, it is reported. Dr. Benjamin S. Black, Grove Hill, has resigned as health officer of Clarke County.

Auditorium for County Medical Society.—The Jefferson County Medical Society opened its new auditorium in the new Hillman Clinic Building, Birmingham, with a postgraduate seminar September 8-9. The auditorium has a seating capacity of 300 and has an adjoining club room. Included with the furnishings are provisions for a loud speaker, a talking moving picture machine and a stationary screen. The seminar was the first held by the county medical society and it is planned to make it an annual affair. The speakers included:

Dr. Angus M. McBryde, Durham, N. C., Recent Investigations on the Prevalence and Treatment of Undulant Fever.
Dr. Benjamin S. Barringer, New York, Malignant Conditions of the Genito-Urinary Tract.
Dr. William F. Rienhoff Jr., Baltimore, Surgical Treatment of Carcinoma of the Lung.
Dr. Elmer L. Sevringhaus, Madison, Wis., Pituitary Therapy in General Practice.
Dr. Hobart A. Reimann, Philadelphia, Treatment of Pneumonia.
Dr. Eugene F. Traub, New York, Dermatophytosis.

CALIFORNIA

Society News.—At a meeting of the Los Angeles Society of Neurology and Psychiatry October 18 the speakers were Drs. Emil Seletz on "Brain Tumor with Abdominal Symptoms"; David L. Reeves, "Epidural Hemangioma Associated with Hemangioma of the Vertebra," and Cyril B. Courville, "Pathogenesis and Pathology of Intracranial Aerocele."——Dr. Leo Eloesser, San Francisco, discussed "Limitations of the Surgical Treatment of Pulmonary Tuberculosis" before the Trudeau Society in Los Angeles October 24.

Personal.—Dr. Walter Rapaport, Imola, has been appointed superintendent of the Mendocino State Hospital, Talmadge, succeeding Dr. Ruggles A. Cushman, who resigned October 1.——Col. James A. Mattison, for sixteen years chief medical officer in charge of the Veterans Administration Facility, West Los Angeles, has announced his retirement, it is reported. A reception was held prior to departure to his ranch in Glendora.——Dr. William J. Quinn has resigned as health officer of Eureka to accept a similar position with Humboldt County.

COLORADO

State Medical Election—Dr. William H. Halley, Denver, was chosen president-elect of the Colorado State Medical Society at its annual convention in Colorado Springs October 7 and Dr. John W. Amesse, Denver, was installed as president. Dr. Carl W. Maynard, Pueblo, was elected vice president. The 1940 meeting will be held in Glenwood Springs. At the recent session it was decided to appoint a committee on milk control to carry on a campaign for uniform milk regulations in all Colorado communities.

Resolution Adopted by State Examiners.—The state board of medical examiners adopted a resolution October 3 making a physician ineligible for licensure in Colorado who attempts the practice of medicine in the state, either alone or through association with a licensed physician, without first obtaining a license. The resolution reads as follows:

Any physician who attempts to practice medicine in the State of Colorado, either alone or through association with a licensed physician, without first having obtained a license from the state board of medical examiners shall be considered to have violated the provisions of Section 17, Chapter 109, Colorado Statutes Annotated 1935, and he shall not be considered eligible subsequently to appear as an applicant for medical licensure.

CONNECTICUT

Personal.—Dr. Joseph I. Linde, New Haven, has been appointed a member of the state tuberculosis commission to serve the unexpired term of the late Dr. Stephen J. Maher.

Hospital News.—The Dillon Memorial Building, a new unit of the St. Francis Hospital, Hartford, was recently dedicated by Miss Catherine Dillon, Hartford, in memory of her brothers, Edward and Charles.

Medical History Library.—The establishment in the Yale University School of Medicine, New Haven, of a library devoted to the history of medicine has been announced. Collections of Dr. John F. Fulton and of the late Dr. Harvey Cushing, both of the Yale faculty, will serve as a nucleus of the library, and Dr. Arnold C. Klebs, Les Terrasses, Nyon, Switzerland, has announced that he is devising to Yale his library on the history of science and of medicine, including his apparatus for the study of early texts. To house the collections the library wing of the Sterling Hall of Medicine will be extended by the use of funds set aside by the Yale Corporation from the estate of John W. Sterling. The extension will be Y shaped with accommodations for 400,000 volumes. In one prong of the Y will be the historical collections, in the other a working library for the school. Construction will begin within the near future, it was stated.

DELAWARE

State Medical Election.—Dr. Bruce Barnes, Seaford, was chosen president-elect of the Medical Society of Delaware at its annual session in October. Dr. Meredith I. Samuel, Wilmington, will take office as president in January. Dr. John H. Mullin, Wilmington, is secretary. Rehoboth Beach was designated as the place for the 1940 meeting, the time to be determined later.

GEORGIA

Society News.—The Georgia section of the Southeastern Surgical Congress and the Seventh District Medical Society held a joint session at the Coosa Country Club, Rome, October 4.——Dr. Stephen T. Brown, Atlanta, among others, discussed "Tuberculosis of the Bladder" before the Fulton County Medical Society, Atlanta, October 19.

Changes in Health Officers.—The state department of health announces the following changes in health officers:

Dr. James H. Litton, Carbon, W. Va., succeeding Dr. Stuart P. Vandiviere, Milledgeville, as commissioner of health for Baldwin County, August 26.
Dr. George M. Anderson, Morgan, succeeding Dr. Luther A. Brendle, Eastman, as commissioner of health for Dodge County, September 6.
Dr. Vandiviere succeeding Dr. William F. Castellow, Americus, as commissioner of health for Sumter County, September 1.
Dr. Oliver W. Jenkins, Edison, succeeding Dr. Clair A. Henderson, Dawson, of Terrell County.
Dr. Albert G. LeRoy, Lyons, has resigned as health commissioner of Toombs County, effective September 25, to accept a similar position succeeding Dr. Robert H. Haralson Jr., Tifton, in Tift County. The latter plans to engage in private practice in Calderwood, Tenn.

District Meeting.—The Fifth District Medical Society was addressed at the Academy of Medicine, Atlanta, October 5 by the following, among others:

Dr. Clarence O. Sappington, Chicago, The Etiologic, Diagnostic and Medicolegal Problems of Occupational Diseases.
Dr. George H. Semken, New York, The Practitioner and the Cancer Problem.
Dr. Ray M. Balyeat, Oklahoma City, Diagnosis and Treatment of Common Allergic Manifestations Encountered by the General Practitioner.

Dr. Edgar Hill Greene, president of the Fulton County Medical Society, gave the address of welcome.

ILLINOIS

Personal.—Dr. Henry B. Knowles, assistant managing officer of the Peoria State Hospital, has been appointed acting managing officer of the Anna State Hospital, succeeding Dr. Andrew F. Barnett, resigned.——Dr. Paul H. Harmon, Springfield, has resigned as superintendent of the division of handicapped children in the state department of welfare to engage in private practice in Fresno, Calif.

Society News.—Dr. Italo F. Volini, Chicago, discussed "Sulfapyridine Treatment of Pneumonia" before the Ogle County Medical Society October 26.——At a meeting of the LaSalle County Medical Society at Starved Rock October 26 Dr. Lowell D. Snorf, Chicago, spoke on "Functional Disorders of the Stomach and Intestines."——Dr. Jesshill Love, Louisville, Ky., addressed the St. Clair County Medical Society October 5 in East St. Louis on "X-Ray in Treatment of Skin Malignancies."

Chicago

Dr. Kronfeld to Direct Postgraduate Education.—Dr. Peter Kronfeld, professor of ophthalmology at Peiping Union Medical College, Peiping, China, for the past six years, has been appointed dean of instruction at the Illinois Eye and Ear Infirmary. This is a new position, in which Dr. Kronfeld will supervise instruction of interns and residents and will have charge of short courses to be given at various times at the infirmary. Dr. Kronfeld, who graduated from the University of Vienna Faculty of Medicine in 1923, came to Chicago in 1928 as assistant professor of ophthalmology at the University of Chicago. In 1929 he became associate professor and remained on the faculty until he went to Peiping in 1933.

Dr. Post Made Dean of Rush Graduate School.—Dr. Wilber E. Post, clinical professor of medicine at Rush Medical College and president of the staff of Presbyterian Hospital, has been appointed dean of Rush Graduate School of Medicine. Organization of the new program of graduate work to become effective in 1942 (THE JOURNAL, October 14, p. 1498) will now begin under Dr. Post's direction. Dr. Post was born in Lowell, Mich., in 1877 and graduated at Rush Medical College in 1903, joining the faculty two years later. He has served as clinical professor of medicine since 1916. He has also been a member of the board of trustees of the University of Chicago since 1919, but under the practice of the board his acceptance of the administrative position required his resignation as trustee.

IOWA

Dr. Geiling Gives Rockwood Lecture.—Dr. Eugene M. K. Geiling, professor of pharmacology, Division of Biological Sciences, University of Chicago, will deliver the third annual Paul Reed Rockwood lecture at the State University of Iowa College of Medicine, Iowa City, November 15. His subject will be "Comparative Anatomy and Pharmacology of the Pituitary Gland."

Society News.—Dr. Leo H. LaDage, Davenport, discussed "Plastic Procedures in General Practice" before the Bremer County Medical Society in Waverly September 27.——At a meeting of the Cass County Medical Society in Atlantic September 21 Dr. Walter A. Anneberg, Carroll, spoke on "Treatment of Pneumonia with Sulfapyridine."——At a meeting of the Lee County Medical Society in Keokuk October 20 the speakers were Drs. John I. Brewer on "Uterine Bleeding"; Grant H. Laing, "Clinical Importance of Pylorospasm"; George W. Hall, "Newer Treatment of Mental and Nervous Diseases," and Fremont A. Chandler, "Low Back Pain." All are from Chicago.

Postgraduate Courses.—Postgraduate extension courses are now under way in the first, second, third, fourth and tenth districts of the state. Participating in these courses as instructors are:

Dr. Fred M. Smith, Iowa City, Diagnosis and Treatment of Coronary Thrombosis.
Dr. Willis M. Fowler, Iowa City, The Anemias.
Dr. John H. Peck, Oakdale, Pulmonary Tuberculosis.
Dr. Nathaniel G. Alcock, Iowa City, Management of Common Urinary Disorders.
Dr. William F. Mengert, Iowa City, Common Gynecologic Disorders.
Dr. Donald C. Conzett, Dubuque, Minor Surgery.
Dr. Arnold S. Jackson, Madison, Wis., The Acute Abdomen.
Dr. Everett D. Plass, Iowa City, Treatment of Leukorrhea.
Dr. Adolph L. Sahs, Iowa City, Diagnosis and Treatment of Neurosis.
Dr. Daniel L. Sexton, St. Louis, Endocrine Therapy: Its Application in General Practice.
Dr. Fremont A. Chandler, Chicago, Basic Problems in the Management of Fractures.
Dr. Roger L. J. Kennedy, Rochester, Minn., Gastrointestinal Disturbances in Infants and Children; Convulsive Attacks in Infants and Children.
Dr. William D. Paul, Iowa City, Hypertension with Complicated Heart Lesions.
Dr. Lester R. Dragstedt, Chicago, Endocrinology.
Dr. Henry W. F. Woltman, Rochester, Minn., Neuritis.
Dr. Edwin B. Winnett, Des Moines, Management of Diabetes.
Dr. Leon S. McGoogan, Omaha, Common Obstetric Abnormalities.
Dr. Lewis M. Overton, Des Moines, Backache.
Dr. Edgar V. Allen, Rochester, Minn., Hypertension.
Dr. Ernest Kelley, Omaha, The More Common Neurologic Conditions.
Dr. Edwin L. Miller, Kansas City, Mo., How Can We Reduce the Mortality Rate of Acute Appendicitis?

KANSAS

Society News.—The Sedgwick County Medical Society was addressed in Wichita October 3 by Dr. Paul F. Stookey, Kansas City, Mo., on "Staphylococcic Septicemia" and October 17 by Drs. Albert R. Hatcher, Wellington, and Hervey R. Hodson, Wichita, on "Problems in the Management of Carcinoma of the Breast" and "Peritonitis" respectively.——At a meeting of the Cowley County Medical Society in Arkansas City September 28 the speakers were Drs. James S. Hibbard and Vincent L. Scott, Wichita, on "Diagnosis and Treatment of Intestinal Obstructions" and "Convulsions in Infancy and Childhood."——The Northwest Kansas Medical Society was addressed at Norton October 3 by Drs. Daniel V. Conwell, Halstead, on "Migraine"; Lloyd O. E. Peckenschneider, Halstead, "Treatment of Congestive Heart Failure," and James L. Jenson, Colby, "Basal Metabolism."

KENTUCKY

Changes in Health Officers.—Dr. Elmer R. Schnake, Newport, has been appointed health officer of that city.——Dr. George B. Davis, Guilford, Conn., succeeds Dr. Chester R. Markwood, Glasgow, as health officer of Barren County.——Dr. Reuben M. Coblin, Frankfort, has been appointed health officer of Franklin County to succeed the late Dr. Eugen C. Roemele.——Dr. James W. Miller, Greensburg, has resigned as director of the Green County Medical Society to enter private practice.

Society News.—Drs. William W. Nicholson and Harry S. Andrews addressed the Jefferson County Medical Society, Louisville, October 2 on "Sulfapyridine in the Treatment of Pneumonia in Children" and "Acute Pharyngolaryngotracheobronchitis in Children" respectively.——Drs. Carl H. Fortune and David Woolfolk Barrow, Lexington, addressed the Bourbon County Medical Society, Paris, October 19 on "Pituitary Functions" and "Surgical Treatment of Varicose Veins" respectively.——Drs. Catherine Brummett and Albert W. Cowan, Middlesboro, addressed the Bell County Medical Society, Middlesboro, October 13 on "Nutritional Requirements of the Normal Infant" and "The Climacteric and the Use of the Estrogenic Hormone" respectively.

District Meetings.—The sixth and seventh councilor districts of the Kentucky State Medical Association held a joint meeting in Somerset October 26. A symposium on a proposed law to require premarital medical examinations was presented in the afternoon by Dr. Fred W. Caudill, Louisville, and Nicholas W. Klein, Somerset attorney. Speakers on the scientific program were Drs. Harry S. Andrews, Louisville, on "Vitamin Deficiency Diseases of Children"; Arthur B. Barrett, Lexington, "Leukorrhea: Its Differential Diagnosis and Treatment," and John Harvey, Lexington, "Sulfapyridine in the Treatment of Pneumonia."——The Third District Medical Society met with the Christian County Medical Society at Hopkinsville October 17, with the following speakers: Drs. John W. Scott, Lexington, "The Problems of the Neuroses"; John M. Coffman, Owensboro, "Recent Advances in Neuropsychiatry," and Addie M. Lyon, Hopkinsville, superintendent of the Western State Hospital, on the work of the hospital.

MASSACHUSETTS

Annual Meeting on Mental Hygiene.—The Massachusetts Society for Mental Hygiene will hold its annual convention at the Twentieth Century Club, Boston, November 23. The principal speaker will be Dr. George S. Stevenson, New York, medical director of the National Committee for Mental Hygiene, who will discuss "New Vistas for Mental Hygiene."

Society News.—At a meeting of the Harvard Medical Society October 10 Dr. Mercier Fauteux, Montreal, Canada, spoke on "A New Surgical Method to Improve the Blood Supply to the Heart in Coronary Disease."——The Suffolk District Medical Society was addressed in Boston October 25 by Dr. Charles H. Lawrence, Dr. Joseph T. Smith and Nicholas T. Werthessen on "Obesity and Menstrual Disturbance: Endocrine and Endometrial Studies"; Drs. Richard H. Overholt, "Clinical Studies in Primary Malignancy of the Lung"; Siegfried J. Thannhauser, "Xanthomatosis"; Samuel Proger, "Observations on Heart Disease," and Joseph H. Pratt, "Secretin Test of Pancreatic Function."——A symposium on "Pain: Its Significance in Diagnosis and Prognosis" was presented October 10 before the Four County Medical Society, comprising the county societies of Berkshire, Franklin, Hampden and Hampshire, by Drs. Lewis M. Hurxthal, Arthur W. Allen, Joe V. Meigs, Boston, and Foster Kennedy, New York.

MICHIGAN

Society News.—Dr. Stanley Milton Goldhamer, Ann Arbor, discussed "Transfusion and the Blood Bank" before the Washtenaw County Medical Society October 16.——The West Side Medical Society, Detroit, was addressed recently by Dr. John G. Mateer, among others, on "Evolution of Knowledge Regarding Vitamin K and Blood Prothrombin in Relation to Hemorrhage."——At a meeting of the Wayne County Medical Society, Detroit, October 16 Dr. Russell L. Haden, Cleveland, spoke on "Etiology and Diagnosis of Leukemia."——Dr. Harry Bakwin, New York, discussed "Newer Developments in Vitamins" before the Calhoun County Medical Society in Battle Creek October 3.——Dr. Manuel E. Lichtenstein, Chicago, addressed the Van Buren County Medical Society, South Haven, October 10 on "Periappendiceal Phlegmon and Abscess."

NEW JERSEY

State Society Arranges Medical Care for Needy.—The Medical Society of New Jersey has issued for the second year its invitation to any person in the state in need of medical care to communicate with the executive office in Trenton. All requests will be referred to the county medical societies of the counties from which the requests come. The societies will assign physicians to investigate applications and provide care in all cases of genuine need.

Dr. Flexner Retires.—Abraham Flexner, LL.D., director of the Institute for Advanced Study, Princeton, since its establishment in 1930, has resigned on the advice of his physician. Dr. Flexner, now 72 years old, has been prominent in education for many years. He was associated with the Carnegie Foundation for the Advancement of Teaching from 1908 to 1925, serving as secretary the last eight years. Early in this period he made the well known study of medical education at the invitation of the Council on Medical Education of the American Medical Association, which led to basic reforms in the medical schools of the country. The study was published in 1910. From 1925 to 1928 he was director of the division of studies and medical education of the General Education Board. He holds many honorary degrees, among them medical degrees from the universities of Berlin and Brussels. His successor at the Institute for Advanced Study will be Frank Aydelotte, LL.D., president of Swarthmore College, Swarthmore, Pa., since 1921.

NEW YORK

Hospital News.—A new $100,000 wing was opened at the Buffalo Columbus Hospital, Buffalo, October 23. The new unit now forms the central part of the hospital. It contains three operating rooms, accommodations for twenty private and ten semiprivate patients, and enlarged outpatient quarters in the basement. This is the seventh major addition to the hospital since it was founded in 1908 by Dr. Charles R. Borzilleri.

Project to Discover Hard-of-Hearing Children.—The New York State Commission to Study Facilities for the Care of the Deaf and the Hard of Hearing announces a case-finding project to discover children under 6 years old who have defective hearing. The project will be carried out in Columbia County under the direction of Dr. Marion F. Loew, a member of the staff of the state department of health and of the commission, in cooperation with the county health commissioner, Dr. Louis Van Hoesen, Hudson, and with the health department's divisions of maternity, infancy and child hygiene and communicable diseases.

New York City

Personal.—Dr. Condict W. Cutler Jr. has been elected an alumni trustee of Columbia University, succeeding Dr. Eugene H. Pool.——Dr. John Francis McGrath has been appointed director of gynecology and obstetrics at St. Vincent's Hospital.

Lectures on Venereal Diseases.—The bureau of social hygiene of the department of health has opened its fall program of lectures on venereal disease for physicians and the public. Sessions for physicians are being held Saturday mornings from October 14 to November 26. In addition, an evening meeting was held October 31 and another is scheduled for December 6. Meetings for the public were announced for October 18, November 15 and December 20. In cooperation with this program the section of historical and cultural medicine of the New York Academy of Medicine presented a symposium on syphilis November 8 by Drs. John L. Rice, health commissioner, Herman Goodman and Theodore Rosenthal.

Society News.—Drs. Harry Gold, New York, and Robert Edward Gross, Boston, addressed the New York Heart Association at a scientific session November 7 on "Studies on the Nature of Digitalis Action" and "Experiences with Surgical Treatment of the Patent Ductus Arteriosus" respectively.——Drs. Francis W. Sovak, New York, and Abraham Shulman, Paterson, N. J., addressed the Bronx Gynecological and Obstetrical Society October 23 on "Operative Treatment of Sterility" and "Pregnancy Following Tubal Implantation" respectively.——Carl R. Moore, Ph.D., Chicago, and Philip E. Smith, Ph.D., addressed the New York Academy of Medicine at its stated meeting November 2 on "Physiology of the Testes and Therapeutic Application of Male Sex Hormones" and "Physiology of the Ovaries" respectively.——Dr. James W. Smith has been elected president of the Alumni Association of the New York University College of Medicine; Drs. Luther B. MacKenzie, vice president, and Phineas Bernstein, secretary.

NORTH CAROLINA

Annual Symposium at Duke.—The sixth annual symposium conducted by Duke University School of Medicine, Durham, October 19-21 was on "Diseases of the Lungs and Thorax." The visiting speakers included Drs. Edward D. Churchill, Maxwell Finland and Frederick T. Lord, Boston; Daniel M. Brumfiel, Saranac Lake, N. Y.; Chester A. Stewart, Minneapolis; Harry A. Bray, Ray Brook, N. Y.; Cameron Haight, Ann Arbor, Mich.; William D. Andrus and Dickinson W. Richards Jr., New York; Isaac A. Bigger, Richmond, Va.; Charles R. Austrian and William F. Rienhoff Jr., Baltimore; Stuart W. Harrington, Rochester, Minn.; Daniel C. Elkin, Atlanta, Ga., and Gabriel Tucker, Philadelphia.

Society News.—Dr. Bernard J. Alpers, Philadelphia, gave two lectures before the Guilford and Forsyth county medical societies in Greensboro in September as the first of a series of seminars sponsored by the two societies. His subjects were "Interpretation of Neurologic Signs in Common Neurologic Disorders" and "Diagnosis and Treatment of Common Neurologic Disorders."——Drs. Joseph T. Sullivan and Thomas R. Huffines addressed the Buncombe County Medical Society, Asheville, October 16 on "Traumatic Rupture of Liver and Diaphragm" and "Urologic Anomalies" respectively.——Dr. Hubert B. Haywood, Raleigh, addressed the Hartnett County Medical Society, Dunn, recently on "Medicine at the Crossroads."

OHIO

Personal.—Dr. George Frederick Moench, Mount Victory, has been appointed health officer of Delaware and Delaware County.——Dr. Orlando E. Harvey, superintendent of the District Tuberculosis Hospital, Lima, has resigned, it is reported, and Dr. Edward W. Laboe, Howell, Mich., has been named to succeed him.——Dr. Maurice Lincoln Fisher, Mansfield, has been appointed medical director of tuberculosis work in Richland County. A half mill tax levy to provide funds for the care of indigent tuberculosis patients will become available in January.

Society News.—Dr. Louis H. Newburgh, Ann Arbor, Mich., addressed the Mahoning County Medical Society, Youngstown, October 17 on metabolism. Dr. Jerome Selinger, New York, will speak November 21 on peptic ulcer.——Drs. Raymond S. Rosedale, Canton, and Walter K. Stewart, Youngstown, addressed the Stark County Medical Society at Canton September 21 on "Infections of the Neck" and "Progress in Medical Economics During the Past Year" respectively.——Dr. Camille J. DeLor, Columbus, addressed the Fayette County Medical Society in Washington Court House recently on "Bile Salts in the Treatment of Biliary Diseases."——Dr. Lauren N. Lindenberger, Troy, addressed the Miami County Medical Society, Piqua, recently on "Dermatitis Resulting from Sensitivity to Novocain."——At a meeting of the Marion Academy of Medicine recently the speaker was Dr. Russel G. Means, Columbus, on "New Conceptions of Otitis Media."——Dr. John A. Toomey, Cleveland, addressed the Montgomery County Medical Society, Dayton, October 20 on "Differential Diagnosis of Various Forms of Meningeal Irritations."

OKLAHOMA

Another Medical Supplement.—A twenty-four page medical section in tabloid form was published September 24 by *The Daily Oklahoman*, Oklahoma City, under the supervision of the Oklahoma County Medical Association. Articles of a general medical and health nature carried by-lines, whereas those dealing with specific diseases and therapeutic methods carried merely the by-line "By a Member, Oklahoma County Medical Association."

Personal.—Dr. William C. Tisdal, medical superintendent of the Western Oklahoma Tuberculosis Sanatorium, Clinton, has resigned to resume private practice, it is reported.——Dr. Richard M. Adams, health officer of Ada and Pontotoc County, has been appointed health officer of Tulsa. Dr. Adams joined the state board of health in 1935 and has served in various capacities.——Dr. Solomon P. Roberts, Nowata, has been appointed health officer of Nowata County.

Society News.—Dr. Edward N. Smith, Oklahoma City, addressed the Garfield County Medical Society, Enid, September 28 on "Care of the Newborn Infant."——Dr. David V. Hudson, Tulsa, addressed the Tulsa County Medical Society, Tulsa, October 23 on "The Epidemiology of Venereal Disease."——Dr. David W. Gillick addressed the Pottawatomie County Medical Society, Shawnee, October 21 on "Collapse Therapy in the Treatment of Pulmonary Tuberculosis."——Dr. George H. Kimball, Oklahoma City, discussed plastic surgery at a meeting of the Woods County Medical Society, Altus, September 25.

OREGON

State Tuberculosis Hospital Dedicated.—The University State Tuberculosis Hospital in Sam Jackson Park, Portland, was dedicated November 1 under the auspices of the state board of control and the state board of higher education with the Oregon Tuberculosis Association cooperating. This is the third unit of Oregon's program of state tuberculosis hospitals and has a capacity of eighty beds. The cost of construction was $290,909. It will be maintained as a unit of the hospitals and clinics of the University of Oregon Medical School under the direction of Dr. David W. E. Baird Jr., medical director, and Ralf Couch, general superintendent. The major function of the hospital will be to provide surgical treatment for tuberculosis, but an outpatient service will also be maintained.

PENNSYLVANIA

Sixth Institute on Exceptional Child.—The Child Research Clinic of the Woods Schools, Langhorne, held its sixth institute on the exceptional child October 24. The general topic of discussion was "Progress of Scientific Research in the Field of the Exceptional Child," and the speakers included Dr. Russell S. Boles, Philadelphia, who presided at one session; William E. Blatz, Ph.D., director, Institute of Child Study, University of Toronto, Canada, on "What Is an Exceptional Child?" and Dr. Juliette Louise Despert, New York, "Research in the Nursery School."

Philadelphia

Second de Schweinitz Lecture.—Dr. Walter R. Parker, Detroit, will deliver the second de Schweinitz Lecture before the section on ophthalmology of the College of Physicians of Philadelphia November 16. His subject will be "Uveitis with Associated Alopecia Poliosis, Vitiligo and Deafness."

TENNESSEE

Personal.—Dr. Jewell R. Wilson has resigned as superintendent of the Western State Hospital, it is reported.——Dr. James E. Dedman, manager of the Veterans Administration Facility, Memphis, has gone on leave of absence and will retire from the service Jan. 31, 1940, when he will have reached the retirement age, it is reported. He has been succeeded at Memphis by Dr. Horace C. Dodge, recently at Fort Bayard, N. M.

Society News.—Dr. Elkin L. Rippy addressed the Nashville Academy of Medicine and Davidson County Medical Society September 19 on "Incidence and Complication of Gastric Ulcer."——Drs. Thomas C. Moss and William M. Adams, Memphis, addressed the Madison County Medical Society, Jackson, September 25 on "Undulant Fever" and "Indications and Time for Plastic Surgery," respectively.——Dr. John G. Fleming, Cincinnati, was the banquet speaker at a meeting of the East Tennessee Medical Association in Greenville October 3. His subject was "Abruptio Placentae." Dr. Cobb Pilcher, Nashville, spoke on "Modern Problems of Neurosurgery."——Dr. James B. Black, Murfreesboro, was elected president of the Tennessee Public Health Association at the annual meeting in Nashville October 4.

TEXAS

District Meeting.—The Northwest Texas District Medical Society met at Mineral Wells recently. Guest speakers were Dr. Clifford J. Barborka, Chicago, who presented a paper on "Recent Advances in Nutrition," and Dr. Morton J. Tendler, Memphis, Tenn., a paper prepared by Dr. John L. McGehee, Memphis, on "Immediate Versus Delayed Treatment of Acute Appendicitis (Appendiceal Peritonitis)."

Society News.—Drs. Nathan C. Carpenter and Jack M. Furman, Fort Worth, addressed the Tarrant County Medical Society, Fort Worth, recently on "Treatment of Acute Sprains with Procaine Hydrochloride" and "Management of Gastro-Enteric Hemorrhage" respectively.——At a meeting of the Dallas County Medical Society October 12 the speakers were Drs. Cleve C. Nash, on "Surgical Treatment of Hypertension"; Horace E. Duncan, "Rural Sewage Disposal," and Guy L. Hacker, "Dental Caries in Children."

Postgraduate Clinic in Fort Worth.—The Tarrant County Medical Society sponsored a medical and surgical clinic in Fort Worth September 26. The speakers were Drs. Warfield M. Firor, associate professor of surgery, Johns Hopkins University School of Medicine, Baltimore; John Zahorsky, professor of pediatrics, St. Louis University School of Medicine; George R. Herrmann, professor of clinical medicine, University of Texas School of Medicine, Galveston, and Meyer Wiener, professor of clinical ophthalmology, Washington University School of Medicine, St. Louis. At the banquet Dr. Edward H. Cary, Dallas, gave an address on socialized medicine.

VERMONT

State Medical Meeting and Election.—The annual meeting of the Vermont State Medical Society, marking the society's one hundred and twenty-fifth anniversary, was held in Burlington October 5-6 under the presidency of Dr. Edwin A. Hyatt, St. Albans. The program included the following addresses:

Dr. Angus C. Black, Brattleboro, Urinary Calculi (the vice president's address).
Dr. David M. Bosworth, New York, The Damaged Shoulder.
Dr. John F. Erdmann, New York, Tumors of the Breast.
Dr. Edward W. Archibald, Montreal, Canada, Personal Experiences in the Surgical Treatment of Appendicitis.
Dr. Wilhelm Raab, Burlington, Arterial Hypertension of Cerebral Origin.
Dr. Nathan B. Van Etten, New York, President-Elect of the American Medical Association, The Quality of Medicine.
Dr. Hyatt, The Future of Medicine (the president's address).

A symposium on obstetrics, arranged by Dr. Herbert A. Durfee, Burlington, was presented by Drs. Claud E. Heaton and James P. Marr, New York, and Benjamin F. Clark, St. Johnsbury. Dr. Van Etten was the principal speaker at the annual banquet. Dr. Albert M. Cram, Bridgewater, was chosen president-elect; Dr. Clarence F. Ball, Rutland, was installed as president, and Dr. Benjamin F. Cook, Rutland, was reelected secretary. Next year's meeting will be in Rutland.

WEST VIRGINIA

State Societies to Meet Jointly.—The house of delegates of the Medical Society of Virginia has accepted an invitation from the West Virginia State Medical Association to meet jointly at White Sulphur Springs in 1940.

Society News.—Dr. John O. Rankin, Wheeling, addressed the Central West Virginia Medical Society at Webster Springs recently on "Intra-Articular or Joint Fractures."——Dr. Temple S. Fay, Philadelphia, addressed the Ohio County Medical Society, Wheeling, October 6 on "Fundamental Basis of Attack Upon Five Problems in Medicine." Dr. William James Gardner, Cleveland, addressed the society October 20 on "Intracranial Complications of Upper Respiratory Infections."

WISCONSIN

Libraries Merged.—The Milwaukee Academy of Medicine and the Marquette University School of Medicine have consolidated their medical libraries, forming a collection of 34,000 volumes. Dr. Irving S. Cutter, dean of Northwestern University Medical School, Chicago, was the speaker at a ceremony inaugurating the new library October 17. Facilities have been enlarged at the university to receive the academy's library, the most important part of which is the collection of the late Dr. Horace Manchester Brown. Henceforth the academy of medicine will hold its meetings at Marquette.

Society News.—Dr. Robert E. McDonald, Milwaukee, addressed the Dodge County Medical Society, Beaver Dam, September 28 on "Toxemias of Late Pregnancy."——Drs. Harold E. Marsh and Luther E. Holmgren, Madison, addressed the Oneida-Vilas County Medical Society, Rhinelander, September 20 on "Modern Treatment of Pneumonia" and "Transfusion" respectively.——Drs. Lowell D. Snorf, Evanston, Ill., and Harry M. Weber, Rochester, Minn., addressed the Rock County Medical Society, Beloit, September 26 on "Functional Disorders of the Gastro-Intestinal Tract" and "Use of X-Ray in Diagnosis of Intestinal Lesions" respectively.——A symposium on goiter was presented before the Milwaukee Society of Clinical Surgery October 24 by Drs. Francis D. Murphy, Frederick A. Stratton, Hobart K. B. Allebach and Hans W. Hefke.

FOREIGN

League Against Rheumatism Suspends Activities.—The International League Against Rheumatism announces from its headquarters in Amsterdam that the condition of war prevents continuation of its activities. The bureau is to be closed and all members and officials have been officially discharged from their rights and duties.

Nobel Prize for 1938 Awarded to Dr. Heymans.—Dr. Corneille Heymans, professor of pharmacology and pharmacodynamics at the University of Ghent, Belgium, received the Nobel Prize in physiology and medicine for 1938, awarded at the same time that the 1939 prize went to Dr. Gerhard Domagk of Wuppertal, Germany, who was the discoverer of the curative effects of prontosil (now neoprontosil). Professor Heymans was born in Ghent and took his medical degree at the university in 1920. He joined the research staff of the university after his graduation and became a full professor in 1929. He is also director of the J. F. Heymans Institute of Pharmacology and Therapeutics, continuing the work of his father on the influence of the Arctic regions on respiration, according to an Associated Press dispatch. Dr. Heymans has visited the United States various times, first under research fellowships and in 1929 as a delegate to the International Physiological Congress. In 1934 he delivered the Herter Lectures at New York University and in 1937 the Dunham Lectures at Harvard Medical School.

Government Services

Medical Mission to China

The U. S. Public Health Service at the invitation of the Chinese government has sent three officers to Southwestern China to investigate in cooperation with the Chinese health service the reported occurrence of a malignant disease near the Burma border and determine the menace to the United States incident to its possible spread to Oriental seaports. The officers are Drs. Louis L. Williams Jr. and Hiram J. Bush and Bruce Mayne, Dr.P.H. In addition to determining the nature and extent of the disease or diseases prevalent in the areas they visit, they will inform the Chinese authorities of the results of their survey and advise them as to control measures.

Syphilis Clinics on Wheels

"Clinics on wheels" for treatment of syphilis in four southern areas have recently been provided by the U. S. Public Health Service with funds made available by the Venereal Disease Control Act of 1938. Successful use of a "trailer clinic" in Glynn, Camden and McIntosh counties in Georgia in 1937 led to the development of the traveling clinics. In a second project in North Carolina in 1938 a specially constructed bus was found more satisfactory than a trailer. The new units are all-steel buses finished in black and silver. The interior is divided into sections, one for blood testing and injection of neoarsphenamine and the other for physical examination and administration of bismuth. There are doors on each side of the body. Two gas sterilizers are part of the equipment and there is desk space for the physician and nurse. The new buses will be used in Macon County, Ala.; Phillips and Lee counties, Ark.; Scott County, Mo., and Charleston County, S. C.

Health Service Engineer Retires

Joseph Augustin LePrince, senior sanitary engineer, U. S. Public Health Service, retired September 1 at the legal age limit after twenty-five years of continuous service. Born in England in 1875, Mr. LePrince graduated in civil engineering from Columbia University, New York, and in 1901-1902 he was assistant to Dr. William C. Gorgas, then chief sanitary officer of Havana, Cuba, during the first organized campaign for the eradication of yellow fever and malaria. From 1904 to 1914 he served as health officer of the section taken over by the United States in connection with the construction of the Panama Canal. In March 1914 he was transferred from the Isthmian Canal Commission to the public health service and was attached to the scientific research division until his retirement. During his service he engaged in studies of malaria control and in control projects, demonstrations and investigations. During 1922 he was temporarily assigned to yellow fever control measures along the Mexican border. Since March 1935 he had been consultant in malaria control to the Tennessee Valley Authority. He had been stationed at Memphis, Tenn., for several years.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Oct. 16, 1939

The Certification of Deaths During the War

In ordinary conditions of civil life all deaths from violence have to be reported to the coroner, who holds an inquest. The uselessness as well as the difficulty of this procedure for the numerous deaths expected from air raids is evident. Like every other contingency which may arise from the war, this one has been provided for. Special arrangements have been made for the certification of deaths due to war operations. Bodies not claimed by relatives will be taken to mortuaries, which have been prepared, and the clerk to the local council will send to the registrar of deaths a certificate that the death was due to war operations. In the case of serving soldiers or airmen and of certain classes of civilians employed with the armed forces, commanding officers are authorized to issue a certificate. The ordinary procedure will apply to other deaths. A physician who attended a person prior to death should issue an ordinary death certificate and should add the words "war operations" to the particulars of violence. When no physician has been in attendance before death the relatives may request one to inspect the body and issue a certificate, and if he is satisfied that death was due to war operations he may say so. Whether a physician has been in attendance or not, there will be no necessity (as there normally is) to report these deaths to the coroner, and no inquests will be held on them.

Chaoul Therapy in England

In a short distance, low voltage form of roentgen therapy, introduced by Henri Chaoul, of Berlin (*Strahlentherapie* **53**:202 [June 29] 1935), and called after him, the tube is so constructed that the anode can be brought within a few centimeters of the lesion and thus their radiation of the tissues is confined to a small area. A tube with the anode at one end for introduction into the vagina in the treatment of carcinoma of the cervix was previously introduced by Schaefer and Witte (*ibid.* **44**: 283 [June 15] 1932) but Chaoul is chiefly responsible for the development of this procedure for the treatment of carcinoma on the surface of the body. At the Royal Cancer Hospital, London, Chaoul therapy was first used in England in 1935 and in the ensuing years the staff has collaborated in giving it a thorough test. A report on the treatment of 500 cases treated from July 1935 to August 1938 has been published by Flood, Smithers and R. Waldron under the title "Short Distance, Low Voltage X-Ray Therapy (*Brit. J. Radiol.* **12**:426 [July] 1939). The malignant cases included 100 epitheliomas, 100 carcinomas of the breast, chiefly cutaneous recurrences, eighty-two rodent ulcers, seven carcinomas of the rectum, seven malignant melanomas, three carcinomas of the parotid gland and eleven miscellaneous cases. The nonmalignant cases included seventy-nine warts and papillomas, twenty-four pitch warts, ten keloid scars, eleven cases of leukoplakia, eleven nevi, thirteen pigmented moles, nine corns, three cases of lupus, two cases of neurofibromatosis and twenty-five miscellaneous cases.

Encouraging results were obtained in certain cases of epithelioma of the lip, scalp, face, neck, trunk, limbs and mouth, and they were remarkably good cosmetically. In rodent ulcer the results were excellent and when the eyelid was affected the majority of cases could be treated without damage to the eyeball (always a difficulty), which is protected by a contact lens with its outer surface covered with lead introduced under the lids. A recent advance is the adaptation of Chaoul therapy to carcinoma in other situations than the surface of the body. Several cases of carcinoma of the urinary bladder have been

treated by the introduction of the Chaoul tube through a suprapubic cystostomy. One massive dose is given and the wound is closed. The nonmalignant lesions, such as warts and papillomas, disappear with excellent cosmetic results. Good results have also been obtained in the treatment of keloid scars, cavernous nevi and corns.

The following are the chief advantages of the treatment: 1. It is possible to give a large dose and spare the surrounding tissues. This results in rapid healing and good cosmetic results. 2. The high dosage—up to 8,000 roentgens a minute—makes the time of treatment short, usually three or four minutes. Many patients can be treated during a day and their loss of time is minimal. It is also possible to administer large doses under anesthesia when surgical exposure of the lesion is necessary. 3. The method is economical and the running expenses are negligible. The majority of the cases can be treated in the outpatient department with a considerable saving to the hospital.

Danger of Food Contamination by Gas Attacks

The danger of food contamination by gas attacks was discussed at a conference of the food group of the Society of Chemical Industry. Dr. A. P. B. Page, of the Entomological Research Station of the Imperial College, Slough, said that methods were available for the detection and determination of all the known war gases. It seemed that many foodstuffs could be well protected against such gases. It should be possible to decontaminate most foodstuffs affected by vapors but few affected by liquids. Contamination was likely to be severe only on the surface of piles of food; thus big piles would be less affected than small ones.

Annual Meeting of the British Medical Association Canceled

The war has had a profound effect on medical arrangements. Many of the usual fixed events have been countermanded. The annual meeting of the British Medical Association, which was due to take place at Birmingham in the summer of 1940, has been canceled.

PARIS

(From Our Regular Correspondent)

Oct. 4, 1939.

Blood Transfusion During the War

In 1937 Mme. Raba Deutsch de la Meurthe, on the initiative of Dr. A. Tzanck and with the cooperation of the Administration of Public Aid of Paris, founded the Centre de transfusions et de recherches hématologiques. A special building was constructed in the St. Anthony Hospital gardens in Paris and completely furnished. Its purpose is to furnish the necessary blood for all transfusions needed by physicians connected with the hospital services of the city, as well as by physicians in private practice, and to organize well equipped laboratories for the study of blood. The center began to function at once. Carefully chosen donors were recruited and permanent files set up where any physician at any time can quickly find donors and transfusion specialists. The donors were subjected to the usual tests. Blood groups were established and the universal donors kept. A large number of donors were selected and paid. In 1938 more than 8,000 blood transfusions were performed. Tzanck's apparatus was used, a syringe with two openings which permits aspiration of 10 cc. of blood and its immediate forcing into the veins of the patient. The blood is transmitted in complete protection from the air, with no need for citration. With the coming of the war, the center was assigned the task of organizing the blood service for wounded soldiers. The blood quantities required could be supplied only by conserved blood. An appeal, accordingly, was made through the press and radio to voluntary donors. The response was overwhelming. Those selected were given the requisite tests and from 200 to 250 Gm. of venous blood was taken. A simple apparatus permits oxygenation and citration of the blood; it is poured into ampules that are promptly sealed and placed in refrigeration. Ten thousand goodwill donors of the universal type are expected. This will permit creating a constantly renewable stock of 500 liters of conserved blood, sufficient for all pressing needs, military as well as civilian. Blood shipments are made in specially wrapped packages and can be used two weeks after taking. Blood changes with age. The power of oxygen fixation and corpuscle resistance slowly diminishes, about the tenth to the twelfth day if physiologic solution of sodium chloride is added to the blood, from the thirteenth to the twenty-first day if sodium citrate is added, from the twentieth to the thirtieth day if a citrated dextrose solution is added. The blood groups do not change, nor do the serologic reactions, but the corpuscles do change from the fifteenth day on. The center has rejected the handling of the blood of dead bodies. Dr. Tzanck was commandeered for war service and has organized a sort of branch of the Paris center in the provincial city to which he was assigned. His place in Paris has been taken in the meantime by his associate Professor Sureau.

Absinth

Absinth has been known for its digestive and tonic properties. Galen often mentioned it. However, the word "absinth" today may mean several things. Absinth as a liqueur comes from Switzerland. It is an alcoholic beverage of different essences the majority of which belong to the genus Artemisia; that is, large and small absinthium, Artemisia rupestris and others. To these are often added Chinese anise (Illicium verum), hyssop (Hyssopus officinalis) and anise (Carum pimpinella). Its recipe has been modified in the course of its expansion in France and in the basin of the Mediterranean and it now contains chiefly anise, or rather anethol.

To a certain quantity of absinth, 1,000 cc. or more, the consumer adds water, which precipitates the essences and causes the solution to become muddy or thick (louche), appearing with fifteen measures of water and giving absinth the character of an apéritif. This quality of louche is demanded by the absinth drinker. An attempt was made to regulate the use of absinth in 1912, and a law was passed prescribing that it contain only 1 Gm. of essence per liter and titrate to not more than 40 per cent alcohol and that it contain no thujone or acetone bodies. Under these conditions it was impossible, with the customary quantities, to obtain the characteristic muddiness unless one also increased the quantities of the liqueur a great deal. The law, therefore, called for only a slight decrease in the quantity of essences absorbed but a great increase in that of alcohol. At the beginning of the World War in 1914 the consumption of absinth was strictly forbidden. But beginning with 1922 it was again authorized in continental France on the basis of the law of 1922, while in Algeria an absinth of 45 per cent alcohol with 2 Gm. of essence per liter was permitted. This absinth permitted the consumer to achieve the desired "muddiness." Fraudulent practices came into use. In southern France powder packages and small bottles of extract under the name of pastis were devised. The consumer dissolved them in any kind of alcohol. The powerful taste concealed the impurities, the butyl or amyl alcohols and even the strong flavor of high alcoholic content. Hence, to the harmfulness of toxic essences was added strong and impure alcohol.

A commission appointed by the minister of agriculture, with Professor Tanon, chairman, examined the toxicity of the essence of anise or rather of anethol, which has replaced it. They concluded that it was not harmful in small doses provided it was correctly distilled and contained no thujone. Anethol is a paropylanisol, also called iso-estragol and in large doses induces convulsions. The commission admitted that if the use of absinth was to be permitted to continue it would be better to adopt

the regulations of Algeria; that is, to authorize 45 per cent alcohol, provided it was pure, and 2 Gm. of essences. In the Académie de médecine, Professor Vincent had a pledge put to a vote tending to complete suppression of absinth and similar beverages. However, the minister of finance will hardly renounce some six billions annually of revenue from alcohol, though it is collected at the expense of the national health.

Harmfulness of Mineral Dusts

At its last session, the Académie de médecine honored the memory of Harvey Cushing, who was one of its members and whose eulogy will be pronounced at the next meeting. It heard a fine funeral oration on Albert Brault, its recently deceased dean. Among the papers read at this session was that of A. Policard and J. Rollet on the harmfulness of mineral dusts tested by the corneal biomicroscope. There are, according to the authors, great differences among mineral dusts. To determine their harmfulness, subcutaneous injections of fine suspensions followed by local examinations of the tissues were made. Recently, intrapleural injections (Sayers) were practiced—an excellent but slow procedure, since one must wait weeks for the tissue response. The same is true of intrapleural or intratesticular injections. Intravenous injections, the results of which are quite precise, remain a laboratory approach. Artificial dust implantation of animals is not practical. Policard and Rollet conceived the idea of inserting into the thickness of a rabbit's cornea, after incision, an extremely small quantity of dry dust. The next day and the following days the cornea was examined with the aid of the corneal biomicroscope or the ocular microscope with the Süllstrand opening. This is a simple test and allows one to take precise cognizance of the reactions of the corneal parenchyma to the dust inserted. When finely pulverized charcoal is used, the least harmful of the dusts, the first reaction is a local edema. This is followed by a grayish infiltration of a cellular nature having minute punctations and being productive of a corneal disturbance around the mineral deposit. All these symptoms belong as much to the traumatism as to the irritation caused by the strange body and constitute the minimal reactions. In extreme cases, on the contrary, the reaction is violent. The edema appears early, is intense and extensive, may last for several weeks and leaves a cicatrice. Between these two extremes all intermediary degrees are found. The authors studied the toxicity of a whole series of dusts by this method and classified them according to their injuriousness.

BERLIN

(From Our Regular Correspondent)

Sept. 15, 1939.

Effect on Head Wounds of Transportation by Air

Professor Schaltenbrand, a neurologist, reported in *Der Deutsche Militärarzt* observations on transporting soldiers with head wounds by air. Rapid conveyance to special clinics should be done at once. Transportation by air may have serious consequences, but they do not exceed those incurred during long transportation by automobile. Schaltenbrand observed that the increase of atmospheric pressure had no positive effect on cerebral fluid pressure. Increased cerebral fluid pressure may result from incipient oxygen deficiency. Whenever it occurs, several factors are to be considered: (1) augmentation of cerebral fluid secretion in the plexus due to oxygen deficiency, (2) elevation of arterial pressure and (3) elevation of venous pressure. It is of prime importance to know that cerebral fluid pressure rises notably in healthy persons at greater altitude, but probably especially so if anemia through loss of blood or for other reasons is present. The application of these principles to the transportation by air of those with head wounds makes the following considerations mandatory: 1. Higher altitudes ought to be avoided as much as possible. 2. If higher altitudes cannot be avoided, oxygen is to be supplied the patient in time without waiting until the 3,000 meter limit has been reached. 3. Circulation must be stimulated by strophanthin. The possibility that air may penetrate into the cerebral fluid spores and cause a tendency of the brain to collapse is much greater than that of oxygen deficiency. Cerebral fluid pressure under conditions of aerial transportation not only varies with low pressure of the outer atmosphere but falls below normal level with atmospheric high pressure. The rise of cerebral fluid pressure in external atmospheric low pressure cannot be remedied with administration of oxygen. This consideration leads to further necessary precautions. 4. Patients with open brain injuries should be placed as horizontally as possible. 5. Wide skull clefts should not be closed before transportation. 6. A roentgen examination should be made before the flight. 7. If the ventricle is filled with air, the plane's ascent and descent should be carefully managed and greater fluctuations of altitude be avoided.

Meeting of the Roentgen Society

The main topics for discussion at this year's meeting of the Deutsche Röntgen Gesellschaft were the following: central x-ray institutes, x-ray tests for cardiac function, dosimetry, short wave therapy, effect of roentgen irradiation on the cells, sterilization by irradiation and x-ray serial tests. Holfelder's paper on the organization of x-ray service in universities and hospitals was occasioned by a similar paper read before this year's congress of German surgeons in which opposition was voiced against the central x-ray institute and the claim of surgeons advanced for x-ray divisions subject to their control. Holfelder pointed out that it was impossible for clinical specialists to be experts also in roentgenology. However, great stress should be laid on a thorough and many sided preparatory training of roentgenologists. Centralized institutes do not aim at monopoly. He admitted that clinicians need their own x-ray apparatus in their clinics for special occasions but also indicated that clinicians should limit themselves to the roentgenology of their special field. Roentgenologists should be trained only in central x-ray institutes. Representatives had been sent to this meeting by large clinical societies to discuss this fundamentally important problem. Schittenhelm, a Munich internist, set forth that the systematic training in the foundations of roentgenology must be given in independent special institutes but that the practical application of the principles acquired should be made in the x-ray divisions of the clinics and hospitals.

High voltage roentgen therapy, however, should be performed largely in independent x-ray institutes. Kirschner, a Heidelberg surgeon, explained that the diagnosis should be done in the individual clinics but that on the whole treatments should be administered in special institutes by roentgenologists. A forcible separation of x-ray diagnosis from the functions of the surgical clinics was out of the question. Besides, larger distances constituted a great disadvantage to the patient, especially in urgent cases. K. Hoede, a Würzburg dermatologist, pointed out that dermatologists had always stood aloof from centralization. In his opinion it was sufficient for a practicing physician who wishes to give his patients roentgen therapy to possess a general knowledge of the other fields of roentgenology. On the other hand, it was not sufficient for a roentgenologist to possess only a superficial knowledge of cutaneous and venereal diseases. The specialist, therefore, should be consulted before and during therapeutic management. He did not doubt that too many skin diseases were treated in x-ray institutes. Dermatologic clinics ought to be included in instruction on roentgen therapy. Holfelder indicated that the desire of roentgenologists for centralized institutes was not motivated by monopolistic intentions to encroach on the activities of the clinicians. The discussions at this meeting may have helped to clarify the situation, for previously roentgenologists had made larger

demands. These discussions bear also on the new medical curriculum requiring students to take a two hour course for one semester in roentgenology.

M. Bürger, a Leipzig clinician, and W. Teschendorf, a Cologne roentgenologist, presented a joint paper on x-ray examinations for cardiac functioning. Bürger set forth that it was better to speak of examinations for circulatory functioning. The examinations were based more or less on the observation of strains on the regulatory mechanism that takes care of an orderly interplay between circulation and respiration. What is observed is arbitrarily induced modification of the size, shape and movement of the heart and its large vessels. The size of the heart is essentially a function of its condition of fulness, a condition which can be influenced by suction (Müller's test) or pressure (Valsalva's test). X-ray examinations of changes in the size of the heart can acquire value for functional tests of the circulation only if all the circulatory conditions and the electrocardiographically perceptible disturbances of cardiac action, if present, are considered.

Reindell, of Freiburg, discussed the effect of sports on the heart, especially that of winners in competitive games. The question whether hearts enlarged by athletic exercises are to be considered as damaged does not receive a uniform answer. He himself denies it, supported by electrocardiographic and kymographic investigations. Neither does he accept the view that the youthful heart inclines more to enlargement than that of the older sportsman. It may be assumed that the heart of the sportsman eliminates its residual blood after strain and thus increases its efficiency.

Rajewski, of Frankfort-on-the-Main, and Schliephake, of Giessen, discussed short wave therapy. Long wave diathermy, they said, had disappeared almost altogether. The generally used wave length of 3 meters did not yet conform to the best conditions for the "selectivity factor"; 1 meter was more favorable. Also the problem of dosage, he said, might soon be sufficiently clarified. In the biology of high frequency currents attention should be called to the fact that the presence of "specific effects" is not sufficiently proved. In fact, much was still doubtful in this field. The 1 meter wave seemed to possess a superior penetration but was accompanied, as Schliephake pointed out, by certain dangers. Therefore, only specially trained and experienced physicians should employ it.

A. Hintze, a Berlin roentgenologist at the surgical clinic of the university, reported on the results of the use of irradiation on carcinomas. During the years 1912-1925 about 5,000 cancer patients were treated, about 3,400 with roentgen rays or radium. A change has set in; more patients are being therapeutically managed with irradiation or irradiation in combination with surgery than by surgery alone. The majority of permanent cures were effected in patients subjected either exclusively to roentgen therapy or in combination with surgical intervention.

Gauss, of Würzburg, and Pickhan, of Berlin, discussed sterilization by means of irradiation. Originally the German laws on sterilization permitted surgery only. Since February 1936, roentgen rays and radium are allowed under certain conditions. A questionnaire addressed to centers possessing legal authority to sterilize elicited the information that 95 per cent of the patients were operated on and 5 per cent were treated with roentgen rays; of the latter, four fifths received roentgen and one fifth, radium therapy. The results of irradiation, with few exceptions, were entirely satisfactory. Secondary effects were relatively few and insignificant compared with those attending surgery. Impairment of the ability to work, he said, because of roentgen therapy was not demonstrable.

Value as Evidence of Blood Group Determination

At the request of the reich's minister of the interior, the Robert Koch Institute for Infectious Diseases in Berlin has rendered an official expert opinion on the value of blood group determination as legal evidence (The Journal, July 2, 1938, p. 72). The report contains the following statements: The evidential value of the blood groups O, A, B and AB and of the M, N and MN characteristics of the blood corpuscles has recently been challenged in different ways. The arguments advanced against the validity of the blood groups are (1) that qualitative changes (mutations) of the genes can occur and (2) that the genes may be hindered in their development so that a structure genotypically present may not receive phenotypical evolution. These objections are answered in the expert opinion as follows: 1. In extensive scientifically performed investigations of heredity and family descent, not a single case of mutation of genes has been established. 2. Factors restrictive of gene development are of no significance for practical purposes. Therefore they offer no scientific basis for limiting the evidential value of the blood groups. The limitations and fallibilities of the methods, the report continues, are sufficiently known to all experts. In all cases in which these methods yield univocal results, the blood group of the individual whose sample has been taken is assured. If the results are equivocal, e. g. defective types or blood samples of the newborn in whom the presence of isobodies cannot be verified, the blood group is not reliably determinable. For that reason, experts must always clearly indicate whether univocal results have been obtained or not.

This judgment of the Robert Koch Institute was based on a questionnaire addressed to experts. All of them agree, on the basis of thousands of observations, that the hereditary transmission of blood group characteristics of A and B and those of the red corpuscles M and N can be safely relied on. If performed according to the regular method, the procedure for the blood groups O, A, B and AB and for the characteristics of the red blood corpuscles M and N can fulfil all legally required conditions. There is no other hereditary characteristic in human beings the hereditary evolution of which has been so fully reexamined and confirmed. The alleged mutability of the blood group of an individual and the deviations from the acknowledged laws of heredity formerly asserted were found to be due to errors of procedure or involved illegitimate offspring.

Only two exceptions exist to the validity of the observations just formulated and to the conclusions to be deduced from them: 1. The possibility of a feeble erythrocytic characteristic $N(N_2)$. Only two cases have been observed in the literature in which the N trait showed too feeble an evolution to permit immediate verification. The Robert Koch Institute has therefore taken the position that the conclusions derived from accepted and correctly performed procedures possess a probability bordering on certainty if the negation of paternity is founded on the absence of N, whereas paternity cannot be denied in the presence of a feeble $N(N_2)$. This probability is exceedingly great because blood samples with feeble N can nowadays be definitely recognized as possessive of a N content, because of the precautions provided. Consequently the two cases mentioned cannot constitute an argument against the reliability of the M and N determinations. 2. Subordinate groups of A (A_1/A_2) and AB (A_1B/A_2B). A high degree of probability attaches to the conclusions derived from observations based on correctly performed procedures of the subordinate blood groups just mentioned. However, statistical material on a large scale is not yet available to permit a categorical statement.

The opinion is summarized in the following words: If paternity can at all be excluded on the basis of blood group examination, all other combinations admit of conclusions that possess absolute certainty, provided the blood group determinations have been made in a scientifically unobjectionable manner.

ITALY

(From Our Regular Correspondent)

Sept. 22, 1939.

Leishmaniasis in Italy

Dr. Pullé, of Riccione, in a lecture before the Società Medico-Chirurgica della Romagna, discussed the clinical forms of leishmaniasis. The insect which transmits leishmaniasis is unknown. Probably various insects which fly during the day may transmit the disease. Rodents are highly receptive but they do not directly transmit the disease.

Professors Monti and Poggi reported on a large focus of cutaneous leishmaniasis which developed at Forli and was observed by the speakers. In a municipality of the province, sixty cases were found. The twenty patients who had local injections of from 0.05 to 0.1 cc. of atabrine, according to Flarer's technic, recovered. The technic of administration is simple. The leishmaniotic nodules regress in ten or twenty days. The speakers showed photographs, microscopic preparations and photomicrographs. They presented four patients who had had the atabrine treatment.

Professor Bartolotti discussed cutaneous leishmaniasis. The speaker found, by microscopic and bacteriologic studies, that the changes in the epidermis due to Leishmania are similar to those in the epithelial cells due to Microbacterium leprae. The reticulo-endothelial cells are phagocytic for leishmania.

Professor Gentili reported three cases of visceral leishmaniasis in children. Two patients were natives of the province of Toscana and the other came from the region of Calabria. Leishmania was identified in one in the bone marrow which was taken by sternal puncture. In the other the parasite was identified in material taken from puncture of the spleen. The Auricchio-Chieffi reaction gave positive results in all three cases. The speakers found that the euglobulin fraction of the blood proteins was increased. They believe that the positive results of the Auricchio-Chieffi test are associated with the increase of the protein fraction.

Vascularization of Human Testicle

Professor Balice recently lectured to the Accademia delle Scienze Mediche e Chirurgiche, of Naples, on primary tuberculosis of the epididymis and testicle. The speaker recently carried on an x-ray study of the vascularization of the human testicle after having injected a thorium preparation into the spermatic artery. The roentgenograms show that the vascular supply of the testicle is provided by the spermatic artery and its branches, which bifurcate through the testicular parenchyma. The roentgenograms of the epididymis and the body of Highmore show a uniform dark shadow from the blood vessels. It cannot be determined whether the blood vessels originate only in the spermatic artery or in both the artery and blood vessels at the body of Highmore. Blood vessels of decreasing caliber from the body of Highmore to the free surface of the parenchyma can occasionally be seen in the roentgenograms. Probably they originate in central blood vessels. The speaker believes that tubercle bacilli come simultaneously to the epididymis and testicle through the blood. Early in the development of tuberculosis the disease is more acute in the epididymis than in the testicle because of the different blood supply of either structure. Tuberculous orchiepididymitis develops in most cases from the hematogenic route. However, in a few cases tuberculosis may be propagated by a process of continuity from the prostate and seminal vesicles to the epididymis and to the testicle. When this is the case, the primary seat of tuberculous granuloma is intracanalicular. The treatment is conservative, by roentgen irradiation. When the lesion is in the epididymis and the testicle is not involved by tuberculosis, an epididymectomy is indicated, after which the results of roentgen treatment are satisfactory.

Personal

Prof. Galeno Ceccarelli, professor of clinical surgery at the University of Perugia, was transferred to the same position at the University of Padua. Professor Ceccarelli graduated in 1913, after which he was appointed to the chair of surgical pathology at the University of Bari. He has published articles on pathologic histology of primary cancer of the epidermal structure of the gallbladder, pedunculated tumors of the liver and malignant tumors of the testicle. He was awarded a prize by the Concorso Nazionale Zanetti for his method of performing cutaneous transplantations in man. He studied the influence of the endocrine system in the regeneration of the skin and bones and also conducted clinical and experimental work on heterotopic ossification. He has written more than seventy articles on surgery, especially on torsion of the gallbladder and the painful symptoms of stagnation of the gallbladder.

Clinical Courses in Hospitals

New clinical courses in the hospitals of Rome were recently opened. The courses form a part of the university curriculum for physicians. The aim is to give new physicians special practice in clinical diagnosis and treatment of patients. Special attention is given to improvement in making diagnoses, determining proper indications and doses of drugs and other therapeutic procedures.

Marriages

WILLIAM SPEARS RANDALL JR., New Orleans, to Miss Hattie Louise Stapleton of El Paso, Texas, in San Antonio, recently.

RICHARD H. ARIMIZU, Hilo, Hawaii, to Miss Millicent Hume of Alliance, Ohio, in Honolulu, August 30.

COURTLAND PRENTICE GRAY JR., Monroe, La., to Miss Betty Eastland Ormond of Forest, Miss., September 9.

ANNA MAXWELL, North Reading, Mass., to Mr. Jerome A. Morris of Moncton, N. B., Canada, October 3.

JOSEPH BOISLINIERE GRINDON JR., St. Louis, to Miss Mary Ann Murray of Carlyle, Ill., September 27.

WARNER LEE WELLS, Raleigh, N. C., to Miss Rebecca Ann Atzrodt of Clarksburg, W. Va., October 7.

MICHAEL J. STIEF, Mount Carmel, Pa., to Miss Margaret Mary Graham of Shenandoah, Pa., July 15.

WILLIAM ERNEST COLEMAN JR., Birmingham, Ala., to Miss Betty Brown of Eastaboga, September 30.

ISAAC EMERSON HARRIS JR. to Miss Mary Elizabeth Teer, both of Durham, N. C., in September.

EDWIN C. GALSTERER, Saginaw, Mich., to Miss Alma Foerster of Holyoke, Mass., September 25.

LEWIS E. ABRAM, Fitzgerald, Ga., to Miss Doris Friedman of Madison, in Athens, September 10.

EARL E. HOUCK JR., Du Bois, Pa., to Miss Katherine Marie Ulrich of Peoria, Ill., September 16.

JAMES MORRIS HIGGINBOTHAM to Miss Sue Dobbins, both of Chattanooga, Tenn., September 6.

LEMUEL PHOTO JAMES JR., James, Ga., to Miss Ila Ellene Walker in Atlanta, September 20.

BENZION C. BARON, Wakefield, Mich., to Miss Marion A. Carter of Crystal Falls, October 8.

HENRY H. MERRELL, Yorkville, Ill., to Mrs. Frank Lincoln Johnson of Chicago, September 9.

DAVID HALE CLEMENT, Boston, to Miss Constance Chambers of Litchfield, Conn., October 7.

JOHN D. FITZGERALD, Roxboro, N. C., to Miss Betty Offerman at Durham, September 5.

RAYMOND JAMES KAY, Wayne, Pa., to Miss Eva P. Welland of Gulph Mills, recently.

LEON E. POLLOCK, Spokane, Wash., to Miss Jean Berry of Portland, Ore., August 13.

REES MORGAN, Roanoke, Va., to Miss Dorothy Hazelwood at Richmond, September 30.

RALPH L. HIGH to Miss Jeanne Price, both of Chicago, September 1.

Deaths

William Battle Malone ✦ Memphis, Tenn.; Memphis (Tenn.) Hospital Medical College, 1899; formerly professor of surgery and clinical surgery at the University of Tennessee College of Medicine; past president of the Tennessee State Medical Association, Memphis and Shelby County Medical Society and the American Association of Railway Surgeons; member of the Southern Surgical Association; fellow of the American College of Surgeons; served during the World War; on the staffs of the Methodist Hospital and St. Joseph Hospital; aged 64; died, September 4, of acute hemorrhagic encephalitis.

Bernard Portis ✦ Chicago; Rush Medical College, Chicago, 1921, died suddenly of heart disease November 1, aged 42. Dr. Portis was assistant professor of surgery in the University of Illinois College of Medicine and associate attending surgeon in Michael Reese Hospital. Previous to the heart disease, which proved to be fatal, he had suffered an attack of toxic encephalopathy. Dr. Portis is survived by two brothers who are physicians—Drs. Milton and Sidney A. Portis.

Max Halle, New York; Friedrich-Wilhelms-Universität Medizinische Fakultät, Berlin, Prussia, Germany, 1898; member of the Medical Society of the State of New York and of the American Academy of Ophthalmology and Otolaryngology; on the staffs of the Broad Street Hospital and the New York Polyclinic Medical School and Hospital; aged 66; was killed, September 5, near New Castle, Del., in an automobile accident.

Newton J. Coker, Canton, Ga.; University of Georgia Medical Department, Augusta, 1893; member of the Medical Association of Georgia; past president of the Cherokee County Medical Society; for many years chairman of the city and county board of education; served during the World War; founder of a hospital bearing his name; aged 71; died, September 11, of coronary occlusion.

Robert Logan Jones, Nashville, Tenn.; Vanderbilt University School of Medicine, Nashville, 1898; member of the Tennessee State Medical Association; past president of the Nashville Academy of Medicine and of the Davidson County Medical Society; served during the World War; city bacteriologist; on the staff of the Protestant Hospital; aged 68; died, September 15.

Donald Wallace Porter ✦ New Haven, Conn.; Harvard Medical School, Boston, 1912; clinical professor of pediatrics at Yale University School of Medicine; member of the American Academy of Pediatrics and the New England Pediatric Society; served during the World War; on the staff of the New Haven Hospital; aged 53; died, September 8, of coronary occlusion.

Cornelius D. Mulder, Spring Lake, Mich.; University of Michigan Homeopathic Medical School, Ann Arbor, 1903; member of the Michigan State Medical Society; for many years member of the school board; on the staff of the Hackley Hospital, Muskegon, and the Elizabeth Hatton Memorial Hospital, Grand Haven; aged 65; died, September 6, of metastatic carcinoma.

Walter E. Ward, Owosso, Mich.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1883; member of the Michigan State Medical Society; past president and secretary of the Shiawassee County Medical Society; health officer; aged 78; on the staff of the Memorial Hospital, where he died, September 10, of cerebral hemorrhage.

Harry Clay Smith, Missoula, Mont.; Bellevue Hospital Medical College, New York, 1894; member of the Medical Association of Montana; fellow of the American College of Surgeons; on the staffs of the Northern Pacific Beneficial Association Hospital and St. Patrick Hospital; aged 67; died, September 13, of heart disease.

Benjamin Hook Ritter, McCoysville, Pa.; Western Reserve University Medical Department, Cleveland, 1886; member of the Medical Society of the State of Pennsylvania; for many years on the staff of the Lewiston (Pa.) Hospital; past president of the Juniata County Medical Society; aged 80; died, August 27.

John Alexander Macgregor ✦ London, Ont., Canada; Western University Faculty of Medicine, London, 1892; an Associate Fellow of the American Medical Association; professor emeritus of medicine at his alma mater; fellow of the American College of Physicians; aged 67; died, September 20, of cerebral hemorrhage.

Rees Bynon Rees, Bakersfield, Calif.; University of Maryland School of Medicine, Baltimore, 1900; Harvard Medical School, Boston, 1901; member of the California Medical Association; owner of a hospital bearing his name; aged 71; died, August 19, of coronary embolus, adenoma of the prostate and diabetes mellitus.

James Francis Rice, Watertown, N. Y.; Columbia University College of Physicians and Surgeons, New York, 1902; fellow of the American College of Physicians; past president of the Buffalo Academy of Medicine; on the staffs of the House of the Good Samaritan and the Mercy Hospital; aged 66; died, August 3.

George Wallace Jarman, Princess Anne, Md.; Bellevue Hospital Medical College, New York, 1888; fellow of the American College of Surgeons; director of the Peninsular General Hospital and member of the hospital executive staff; aged 77; died, September 19, of acute myocarditis.

Maurice Isaac Stein ✦ Harrisburg, Pa.; University of Maryland School of Medicine, Baltimore, 1909; past president of the Harrisburg Academy of Medicine; served during the World War; served on the staff of the Harrisburg Hospital in various capacities; aged 52; died, August 15.

Arthur Henry Harms, Knoxville, Ill.; Rush Medical College, Chicago, 1904; member of the Illinois State Medical Society; member of the board of education; aged 58; secretary of the staff of the Galesburg (Ill.) Cottage Hospital, where he died, September 21, of coronary thrombosis.

William Bryan Summerall, Atlanta, Ga.; Tulane University of Louisiana School of Medicine, New Orleans, 1896; veteran of the Spanish-American and World wars; formerly medical superintendent of the Grady Memorial Hospital; aged 74; died, September 5, of heart disease.

Leroy Alson Luce ✦ Boston; Tufts College Medical School, Boston, 1906; member of the American Psychiatric Association and the New England Society of Psychiatry; aged 59; died, September 27, in the West Suburban Hospital, Oak Park, Ill., of carcinoma of the lungs.

Lehnoir Alfred McComb ✦ Tulsa, Okla.; Baylor University College of Medicine, Dallas, Texas, 1918; fellow of the American College of Surgeons; on the staff of the Morningside Hospital and St. John's Hospital; aged 45; died, September 1, of a self-inflicted bullet wound.

John Davis Duckett, Houston, Texas; University of Nashville (Tenn.) Medical Department, 1898; Vanderbilt University School of Medicine, Nashville, 1899; member of the State Medical Association of Texas; aged 73; died, August 31, of congestive heart disease.

Max William Vieweg, Wheeling, W. Va.; University of Maryland School of Medicine, Baltimore, 1917; member of the West Virginia State Medical Association; served during the World War; on the staff of the Ohio Valley General Hospital; aged 55; died, August 13.

Charles Paxton Stackhouse ✦ Sandpoint, Idaho; Medico-Chirurgical College of Philadelphia, 1898; served during the World War; past president and secretary of the Bonner County Medical Society; on the staff of the Graham Hospital; aged 68; died, August 8.

Fred Wells Granger ✦ Surgeon Lieutenant Commander, U. S. Navy, Houston, Texas; Yale University School of Medicine, New Haven, Conn., 1918; entered the Navy in 1919; aged 48; died, August 22, in the Methodist Hospital of suppression of urine.

Richard Stephenson, West Lebanon, Ind.; Barnes Medical College, St. Louis, 1898; member of the Indiana State Medical Association; formerly county health commissioner; aged 72; died, September 1, at Rochester, Minn., of coronary sclerosis.

Burton Roy Miller, Tiffin, Ohio; Ohio Medical University, Columbus, 1897; member of the Ohio State Medical Association; veteran of the Spanish-American War; formerly county coroner; aged 74; died, September 16, of coronary occlusion.

Fred Harrison Schleich, Chicago; Chicago Medical School, 1926; member of the Illinois State Medical Society; on the staff of the Illinois Masonic Hospital; aged 50; died, September 16, of cerebral hemorrhage, arteriosclerosis and hypertension.

Leon Brinkmann, Philadelphia; University of Pennsylvania Department of Medicine, Philadelphia, 1887; formerly on the staffs of the Jewish Hospital, Mount Sinai Hospital and St. Agnes Hospital; aged 72; died, August 23.

Beatrice Alma Reed Chatigny, Taunton, Mass.; Tufts College Medical School, Boston, 1913; formerly on the staffs of the Taunton State Hospital and the Northampton (Mass.) State Hospital; aged 48; died, August 18.

John Sebring, Bellefonte, Pa.; Jefferson Medical College of Philadelphia, 1896; member of the Medical Society of the State of Pennsylvania; on the staff of the Centre County Hospital; aged 68; died, August 11.

Philip Richard Flanagan, Chatham, N. Y.; College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1889; aged 73; veteran of the Spanish-American War; died, August 4.

John Frank Kilroy, Detroit; Detroit Homeopathic College, 1911; member of the Michigan State Medical Society; city physician; aged 59; died, September 9, in the Alexander Blain Hospital of pneumonia.

Siegfried F. Bauer ✠ New York; Julius-Maximilians-Universität Medizinische Fakultät, Würzburg, Bavaria, Germany, 1902; aged 60; died, August 30, in Los Angeles, of septic infarction of the lung.

Theodore H. Thordarson, Minneota, Minn.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1897; formerly health officer; aged 74; died, August 2.

Winston W. Barnard, Headland, Ala.; Memphis (Tenn.) Hospital Medical College, 1894; aged 79; died, August 22, in the Moody Hospital, Dothan, of a carbuncle on the neck and chronic myocarditis.

Robert Andrew Jacobsen ✠ Exira, Iowa; State University of Iowa College of Homeopathic Medicine, Iowa City, 1894; aged 60; died, September 6, in South Haven, Minn., of myocarditis.

Joseph Jarvis, Riverside, Calif.; Bellevue Hospital Medical College, New York, 1866; Victoria University Medical Department, Coburg, Ont., Canada, 1867; aged 96; died, August 25, of senility.

John Herbert Callen, Oakland, Calif.; Homeopathic Medical College of Missouri, St. Louis, 1890; aged 70; died, August 3, of strangulated inguinal hernia and tuberculosis of the lungs.

Edward von Adelung, Oakland, Calif.; University of California Medical Department, San Francisco, 1892; aged 72; died, August 25, of cerebellopontile angle tumor and cerebral arteriosclerosis.

Charles Frederick Mains, Boston; Harvard Medical School, Boston, 1896; member of the Massachusetts Medical Society; served during the World War; aged 67; died, August 17.

Charles Rudderow Hutcheson ✠ Camden, N. J.; Hahnemann Medical College and Hospital of Philadelphia, 1920; aged 43; died, September 22, of a self-inflicted bullet wound.

William Diamond Sweet, Toronto, Ont., Canada; University of Toronto Faculty of Medicine, 1931; aged 33; on the staff of the Western Hospital, where he died, August 14.

Frank Dunster White ✠ Milford, Mass.; University of Vermont College of Medicine, Burlington, 1897; formerly on the staff of the Milford Hospital; aged 64; died, August 28.

Robert F. Peak, Louisville, Ky.; University of Louisville (Ky.) Medical Department, 1880; also a lawyer; aged 80; died, August 16, of hypertrophy of the prostate and heart disease.

Howard D. Manchester, Peoria, Ill.; Hahnemann Medical College and Hospital, Chicago, 1884; aged 79; died, September 4, in the Methodist Hospital of coronary arteriosclerosis.

William Fraser Bryans, Toronto, Ont., Canada; University of Toronto Faculty of Medicine, 1890; for many years member of the board of education; aged 78; died, September 28.

Charles Thomas McLean, Hallsville, Ill.; University of Missouri School of Medicine, Columbia, 1879; aged 83; died, September 10, in the Mennonite Hospital, Bloomington.

Ellie H. Putman, Cuero, Texas; University of Tennessee Medical Department, Nashville, Tenn., 1892; health officer; aged 73; died, August 24, in the Lutheran Hospital.

Leslie Lamb, Lorimor, Iowa; Keokuk (Iowa) Medical College, 1896; member of the Iowa State Medical Society; aged 69; died, August 5, in Van Nuys, Calif.

John Joseph Mulvanity, Nashua, N. H.; Tufts College Medical School, Boston, 1913; member of the New Hampshire Medical Society; aged 57; died, August 13.

David Salinger, Chicago; University of Maryland School of Medicine, Baltimore, 1894; aged 80; died, September 17, of cerebral hemorrhage and arteriosclerosis.

Thomas Raymond Dorris, Nanticoke, Pa.; Jefferson Medical College of Philadelphia, 1925; on the staff of the Mercy Hospital; aged 40; died, August 5.

Samuel J. Litz ✠ Chicago; Chicago College of Medicine and Surgery, 1916; for many years member of the board of education; aged 56; died, September 10.

Winfield Benjamin Trickey, Pittsfield, Maine; Medical School of Maine, Portland, 1913; member of the Maine Medical Association; aged 57; died, August 17.

Charles Chester Cottrell ✠ Scotia, Calif.; Cooper Medical College, San Francisco, 1907; chief surgeon to the Scotia Hospital; aged 56; died, August 14.

Albert Lincoln Spanogle, Altoona, Pa.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1882; aged 78; died, August 10.

Randall Schuyler, Long Beach, Miss.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1877; aged 80; died in August.

Adam Emory Kauffman, Chicago; Rush Medical College, Chicago, 1885; aged 82; died, September 3, in the Presbyterian Hospital of coronary sclerosis.

Ernest Max Sasville, Collinsville, Ill.; Northwestern University Medical School, Chicago, 1902; aged 76; died, August 27, of chronic myocarditis.

Charles Reuben Buck, Columbus, Ohio; Pulte Medical College, Cincinnati, 1902; aged 62; died, September 1, of a self-inflicted bullet wound.

A. R. Lydy, Willard, Ohio; Hahnemann Medical College and Hospital, Chicago, 1883; aged 86; died, September 1, of cerebral hemorrhage.

Berton Mell Bishop, Archer, Fla.; College of Physicians and Surgeons, Baltimore, 1890; aged 70; died, August 22, of organic heart disease.

Lynn Noah Daniel Kunkel, Pittsburg, Calif.; University of California Medical School, San Francisco, 1932; aged 36; died, July 26.

George Thompson Pool, Vader, Wash.; Barnes Medical College, St. Louis, 1893; aged 74; died, August 26, in a hospital at Olympia.

Clarke Eugene Hinman, Syracuse, N. Y.; New York Homeopathic Medical College and Hospital, 1895; aged 80; died, August 27.

Arthur Wellington Ligon, Oxford, Ala.; Vanderbilt University School of Medicine, Nashville, Tenn., 1884; aged 80; died, August 18.

William J. Casteel, Blairsville, Ga.; Tennessee Medical College, Knoxville, 1898; aged 75; died, August 26, of an overdose of amytal.

James W. Clark, Columbus, Ga.; North Carolina Medical College, Davidson, 1906; aged 56; died, August 24, of cerebral hemorrhage.

Julius Schneyer, Philadelphia; Jefferson Medical College of Philadelphia, 1909; aged 64; died, August 8, of coronary thrombosis.

Buchanan Burr, Yarmouthport, Mass.; Harvard Medical School, Boston, 1879; aged 83; died, August 11, of coronary thrombosis.

Henley Abraham Stark, Cleveland; Cornell University Medical College, New York, 1937; aged 26; was drowned, August 12.

Abner William Shultz, Lebanon, Pa.; Jefferson Medical College of Philadelphia, 1870; formerly coroner; aged 93; died, August 19.

Jessie Boggs Stoner, Berlin, Pa.; Woman's Medical College, Chicago, 1889; aged 74; died, August 28, of diabetes mellitus.

Vincent D. Krout, Mechanicsburg, Ohio; Medical College of Ohio, Cincinnati, 1897; aged 70; died in August of angina pectoris.

Frank E. Shepardson, Painesville, Ohio; Indiana Eclectic Medical College, Indianapolis, 1889; aged 77; died, August 22.

Milton Armstrong Griffith, Lintlaw, Sask., Canada; Manitoba Medical College, Winnipeg, 1904; died, August 9.

Peyton H. Calloway, Beckley, W. Va.; Leonard Medical School, Raleigh, N. C., 1901; aged 69; died, August 1.

Henry LeHardy, Chattanooga, Tenn.; Savannah (Ga.) Medical College, 1875; aged 86; died, August 15.

Edward Linwood Emrich, Los Angeles; Rush Medical College, Chicago, 1892; aged 69; died, August 8.

Joseph Clyde Renwick, Warren, Ill.; Rush Medical College, Chicago, 1904; aged 58; died, August 29.

Bureau of Investigation

PEPPLES PEP-YOU-UP

The William Everrette Fraud

William Everrette carried on a piece of mail-order quackery from Philadelphia that has been declared a fraud and debarred from the mails. Everrette used such trade names as "Pepples Co.," "Pepples Pep-You-Up Co." and "W. E. M. E. Medicine Co." Everrette called himself "Doctor" and claimed to have studied "naturopathy" and to have been licensed by the state of New Jersey to practice "naturopathy." The Post Office fraud order, however, brought out that there had been accepted as evidence in this case a letter from the New Jersey Board of Medical Examiners stating that any one who intends to practice naturopathy in New Jersey must secure a license from that board to practice medicine and surgery and that William Everrette was not licensed to practice any branch of medicine and surgery in New Jersey.

The character of the Everrette fraud is shown in two of his advertisements:

SEXUAL VIGOR
For Men and Women

Try Pepples Pep-You-Up, non-injurious; no drugs or dope. The result is pep, power, energy and endurance. Bring back lost pleasures.

And another:

WEAK MEN AND WOMEN TOO

Do you suffer from lost PEP, weakness, piles, kidney, indigestion, nervousness, rheumatic pains, getting up nights. Say good-bye to these conditions. Buy a bottle of W. E. M. E. Herb Tonic. . . . $1.00 per bottle. Cash with order.

These advertisements, according to the evidence in the case, were placed in "various newspapers."

On July 11, 1938, Hon. W. E. Kelly, Acting Solicitor for the Post Office Department, after a hearing in Washington at which Everrette and his attorney appeared, recommended in a memorandum to the Postmaster General that this fraud be debarred from the mails. The information in this article is based on the facts given in the Solicitor's memorandum and, in part, on material in the files of the Bureau of Investigation of the American Medical Association.

The "treatment"—whether for piles or for lack of "pep"—consisted of a liquid and some tablets. The liquid, according to government chemists, was a solution of epsom salt in water flavored with peppermint, together with some laxative drugs. Yet Everrette claimed in his advertisements that his stuff contained "no drugs." The tablets when analyzed were reported to consist essentially of plant tissue including a bitter and a laxative. Both the tablets and the liquid were reported to contain damiana, which the Council on Pharmacy and Chemistry has described in the "Epitome of the U. S. P. and N. F." (A. M. A. Press) as an "ingredient of nostrums for sexual debility in the male; mildly irritant, but otherwise probably inert."

The government charged that the claims made by Everrette that his "patent medicines" would enable sufferers from "kidney trouble," indigestion, piles, sexual weakness, and so on to "say goodbye to these conditions" were false and fraudulent. Even the physician whom Everrette got to testify in his behalf practically admitted the same thing.

The Post Office Department is not the only government agency that looked into this fraud. As long ago as March 1937 the Federal Trade Commission issued a complaint against Everrette, trading as W. E. & M. E. Medicine Co. The charge was not that the business was a fraud but that the claims made by Everrette were "exaggerated and misleading" and that such claims would cause "diversion of trade from competitors." The Commission's complaint allowed Everrette twenty days in which to file answers to the charge. Four months later (July 1937) the Commission reported that a hearing on the charge would be held in Philadelphia on July 30, 1937. Time passed! Ten months later (May 1938) the Commission declared that a hearing on the same case would be held in Washington, D. C., on May 27, 1938. More time passed! Four months later still (September 1938) the Commission again reported that a hearing on the same charges would be held in Washington on Sept. 28, 1938—more than two months after the Post Office Department had put this piece of mail-order quackery out of business! The case was not finally settled until September 1939, when the Commission definitely ordered Everrette to cease representing that his "Herb Tonic" purifies the blood, relieves all acute pains, stimulates the sexual organs or system, or does some of the other things claimed for it.

The Post Office Department acted with less circumlocution in Everrette's case. It notified him of the charges on April 28, 1938, and on July 14, 1938, his fraud was debarred from the mails.

MISBRANDED "PATENT MEDICINES"

Abstracts of Notices of Judgment Issued by the Food and Drug Administration of the United States Department of Agriculture

[EDITORIAL NOTE.—The abstracts that follow are given in the briefest possible form: (1) the name of the product; (2) the name of the manufacturer, shipper or consigner; (3) the composition; (4) the type of nostrum; (5) the reason for the charge of misbranding, and (6) the date of issuance of the Notice of Judgment—which is considerably later than the date of the seizure of the product and somewhat later than the conclusion of the case by the Food and Drug Administration.]

Go-Gon 7-11.—Helm Co., Benton Harbor, Mich. Composition: Liquid, essentially small amounts of boric acid, zinc sulfate, a calcium compound, phosphates, glycerin and water; tablets, chiefly small proportions of ferrous sulfate and volatile oils (including santal, wintergreen and cubeb) with copaiba, and chalk coating. Fraudulently represented as effective in preventing and curing gonorrhea, discharges from urethra and bladder, and urinary complaints in general.—[*N. J. 29444; February 1939.*]

Minnequa Water.—Minnequa Springs, Canton, Pa. Composition: A lightly mineralized water of the bicarbonate type. Fraudulently represented as an effective treatment for impaired tissues, acid dyspepsia, constipation, gallstones, gravel, gout, diabetes, skin eruptions, rheumatism, neuritis, obesity, etc.—[*N. J. 29262; December 1938.*]

Ranoll's (Dr.) Indian Black Tablets.—Suter Chemical Co., Altoona, Pa. Composition: Essentially methenamine, saltpeter, oil of juniper and plant drugs including buchu, bearberry, podophyllum and an emodin-bearing drug. Fraudulently represented to be effective for kidney and bladder disorders, etc.—[*N. J. 29431; February 1939.*]

Ranoll's (Dr.) Indian Herb Tablets.—Suter Chemical Co., Altoona, Pa. Composition: Essentially aloe, podophyllum, gentian and red pepper. Fraudulently represented as an effective remedy for stomach, blood and liver disorders, sick headache, etc.—[*N. J. 29431; February 1939.*]

Sanettes (Mentholated Kerchiefs).—San-Nap-Pak Mfg. Co., Wheelwright, Mass. Composition: Tissue paper impregnated with menthol. Claims that it was "Useful during . . . hay fever and sinus irritations" and "Aids in clearing congested air passage" were declared fraudulent.—[*N. J. 29258; December 1938.*]

Saxon Blackberry Cordial Compound.—Saxon Co., Duquesne, Pa., and Cleveland, Ohio, and Royal Mfg. Co., Duquesne. Composition: Essentially water, sugar, glycerin and alcohol, with small amounts of salicylic acid and plant extracts, including ginger. Fraudulently represented as a remedy "For Diarrhea, Summer Complaint, Cholera Morbus, Cramps, Colic and similar complaints."—[*N. J. 29270; December 1938.*]

Shapley's Liniment.—Shapley Drug Co., Inc., Decatur, Ill. Composition: Essentially common salt with small proportions of ammonia and ammonium salts, and extracts of plant drugs, with camphor and water. Fraudulently represented as effective in rheumatism, neuralgia, neuritis, croup, etc.—[*N. J. 29433; February 1939.*]

Shapley's Stimulating Pills.—Shapley Drug Co., Inc., Decatur, Ill. Composition: Essentially plant drug extracts including a bitter, coated with baking soda and dextrose, and colored green. Fraudulently represented to stimulate the kidneys and bladder and to help backache, rheumatic pains, uric acid, gout, scanty urine, etc.—[*N. J. 29433; February 1939.*]

Shapley's Unguentum Camphoratum.—Shapley Drug Co., Inc., Decatur, Ill. Composition: Essentially a small amount of volatile oils including camphor, menthol and possibly eucalyptol, in a base chiefly of petrolatum and a small amount of paraffin. Fraudulently represented as a treatment for catarrh, hay fever, earache, influenza, neuralgia, tonsillitis, etc.—[*N. J. 29433; February 1939.*]

Trox Tablets.—Oxol Laboratories, Denver. Composition: Essentially charcoal, starch, magnesium carbonate, extracts of plant materials including saponins, and a small amount of oxyquinoline sulfate. Effectiveness as a treatment for urinary infections, cystitis, prostatic and venereal disorders was fraudulently represented.—[*N. J. 29259; December 1938.*]

Ward's Anti-Pain Remedy.—Dr. Ward's Medical Co., Winona, Minn. Composition: Essentially a small amount of volatile oils (including wintergreen, sassafras and mustard), with alcohol and water. Fraudulently represented as an effective treatment of lame back, rheumatism, neuralgia and lumbago.—[*N. J. 29450; February 1939.*]

Ward's Cough Syrup.—Dr. Ward's Medical Co., Winona, Minn. Composition: Essentially alcohol, ammonium chloride, chloroform and tarry material, with a small amount of plant extracts and aromatics. Fraudulently represented as effective in treating "certain disorders and diseases of the bronchial tubes and lungs, coughs, spasmodic croup, bronchial coughs, sore throat, pleuritic coughs, whooping cough, la grippe coughs, hoarseness, and kindred ills affecting the lungs and bronchial tubes, bronchitis, pleurisy, throat disorders and croup."—[*N. J. 29450; February 1939.*]

Correspondence

STANDARDIZATION OF BLOOD PRESSURE READINGS

To the Editor:—The report of the Committees for the standardization of Blood Pressure Readings appointed by the American Heart Association and by the Cardiac Society of Great Britain and Ireland recently appeared in THE JOURNAL (July 22, p. 294). The recommendations embodied in the report are excellent except for those of the American committee relative to diastolic pressure readings. The committees agree that "with continued deflation of the cuff, the point at which the sounds suddenly become dull and muffled should be known as the diastolic pressure." However, the American committee recommends that "if there is a difference between that point and the level at which the sounds completely disappear . . . the latter reading should be regarded also as the diastolic pressure." The British committee, on the other hand, "believes that except in aortic regurgitation it is nearly always possible to decide the point at which the change comes and this is the only reading that should be recorded."

From the physiologic point of view there is much to substantiate the British and little to support the American opinion in this matter. Ordinarily, of course, the difference between the diastolic readings obtained by using the sudden muffling of the sounds and the disappearance of the sounds is not more than from 5 to 10 mm. of mercury. However, in an occasional individual the sounds persist even to the 0 level and thus in the report the American committee recommends the recording of a blood pressure of 140/70-0. A diastolic pressure of 0 is possible only theoretically with a completely rigid vascular tree.

Recent studies have shown that there is reasonably close agreement between diastolic readings obtained in man by direct methods and by the indirect method of employing the appearance of the muffled sounds (*Ztschr. f. d. ges. Exper. Med.* **79**:569, 1931; THE JOURNAL, Sept. 12, 1936, p. 853).

The diastolic pressure is considered to be the minimum pressure in an artery at the end of ventricular diastole. Only confusion can result from assigning two values to a single pressure level. In our courses in physiology for medical students we have for years discouraged the use of the disappearance of all sounds as a criterion for the diastolic pressure level and will continue to do so.

GEORGE E. WAKERLIN, M.D., PH.D., Chicago.
Professor of Physiology and Head of the Department of Physiology, University of Illinois College of Medicine.

BIOGRAPHY OF DR. HARVEY CUSHING

To the Editor:—Mrs. Cushing has requested me to prepare a biography of her husband, and I should be most grateful to any one who wishes to make letters, anecdotes or other memorabilia available.

Copies of all letters, no matter how brief, are desired, and if dates are omitted it is hoped that, when possible, these may be supplied (e. g., from the postmark). If original letters or other documents are submitted, they will be copied and returned promptly.

A new medical library building is being erected at Yale University School of Medicine to receive Dr. Cushing's library and collections, including his letters, diaries and manuscripts. Any of his friends who wish, now or later, to present correspondence, photographs or other memorabilia for permanent preservation among the Cushing papers will receive the appreciative thanks of the university.

JOHN F. FULTON, M.D.,
333 Cedar Street, New Haven, Conn.
Yale University School of Medicine.

SILK IN SURGERY

To the Editor:—Your editorial in the October 7 issue of THE JOURNAL "The Rennaissance of Silk in Surgery" is apropos, as silk for suturing has been relegated into desuetude for too long a time. Some fifteen or eighteen years ago, in line with the current fashion, I began to employ clips in the closure of mastoid wounds. The results were not always satisfactory because of secondary infections. I decided that too much tension by the clips on the edges of the wound was responsible for necrosis of the tissue with the resulting difficulties; although these were not productive of actual mal results as to eventual union, the healing was delayed. Then I turned to catgut—plain or chromicized—with practically the same difficulties. For the past six years I have used silk in place of clips or catgut and, making sure that not too great tension on the sutures is exerted, I have not been bothered with any secondary necrosis and secondary infection. Your editorial remarks are directed particularly toward silk as opposed to catgut, but I would extend that opposition to include metal clips.

PHILIP FRANK, M.D., Schenectady, N. Y.

ILLEGITIMACY IN THE UNITED STATES

To the Editor:—May I express to you my deep appreciation of the editorial on illegitimacy in the United States, which appeared in THE JOURNAL September 30, page 1329.

We in New Jersey are engaged in the administration of a law which became operative Jan. 1, 1939, for a better control of the adoption situation, especially in relation to good social practice.

Previous to Jan. 1, 1939, adoption practice was most informal, easily commercialized and with no guaranty whatever that the child, the child's mother and the adopting parents were protected in any way.

No longer may individuals place children for adoption without subsequent review, on order of the court, of all the factors involved; this department and incorporated social agencies, qualified to serve children, are the instrumentalities to be used by the court in the necessary investigations which shall insure to the three parties concerned that their best interests are protected.

In addition, provision is made to protect the confidential nature of such transactions. We believe that we shall have informative material available in regard to this whole matter which may be useful in the future handling of the problem.

ELLEN C. POTTER, M.D., Trenton, N. J.
Director of Medicine, Department of Institutions and Agencies.

DIFFICULTIES IN EVALUATING AN INSULIN PREPARATION

To the Editor:—The efficiency of a new insulin preparation is determined by its effect on the sugar metabolism of a diabetic patient who is receiving suitable quantities of food. Judgment is rendered difficult by unexplained variations in sugar excretion, though every effort has been made to control insulin dosage, diet, physical and mental activities and the like. It is probable that this annoying irregularity is occasioned by unknown limiting factors that are necessary for insulin activity. The profession is distressingly ignorant of this phase of carbohydrate metabolism, and it is to be hoped that further work by biochemists and physiologists will elucidate this question.

Another disturbing factor, more amenable to correction, is the lack of agreement among writers as to what constitutes acceptable regulation of the diabetic patient. A committee of men especially interested in diabetes might undertake to dispose of this problem.

LOUIS BAUMAN, M.D., New York.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

CANCER OF LUNGS

To the Editor:—**The condition of my father, who is 62 years old, was diagnosed bronchial carcinoma of the squamous cell type (primary) in December 1938. Diagnosis was made by biopsy. Prior to that time he had a nonproductive cough for five months, some loss of weight and slight general debility. In January 1939 roentgen treatment was started over the upper right part of the chest, the site of the lesion. Each day he received 200 roentgens over the anterior and posterior portions of the chest. A total of 8,000 roentgens was given. Coughing was much less and generally he felt better as well as gaining several pounds. Seven months after conclusion of the first roentgen treatment, coughing became more pronounced and general debility more marked. An x-ray examination of the chest revealed an atelectatic area in the lower part of the right lung, involving most of the middle lobe and a small amount of the lower lobe. This of course was thought to be due to extension rather than possible damage by former roentgen treatment. Treatment was started over the new area, 200 roentgens anteriorly and posteriorly daily, a dose of 8,000 roentgens being contemplated. All treatment has been given at 200 kilovolts. There has been no reduction of the cough since treatment has been started and some nausea has been experienced. Will you please advise me what other treatment might help. Do you consider the roentgen treatment adequate? If not, please advise me as to the dosage and amount. I would also appreciate your comment on the expectancy of life.**

M.D., Texas.

ANSWER.—The events described in this case are fairly typical of the results usually obtained in the roentgen treatment of cancer of the lungs. The treatment resulted in some degree of palliation, followed by recurrence. The second course therapy was less efficacious. This holds true for a second irradiation not only of cancer of the lungs but of other lesions as well. In all probability further roentgen or radium treatment would not be of value.

The prognosis of cancer of the lungs is somewhat as follows: One third of the patients die within three months, one third within six months and the other third within twelve to eighteen months.

INGESTION OF POTASSIUM PERMANGANATE

To the Editor:—**Please give me what information you can on the ingestion of potassium permanganate. My inquiry is instigated by the discovery that a considerable number of men have been using potassium permanganate over a period of time going back several years in the self treatment of acute coryza and boils. For both conditions they claim that the material taken as a one-tenth molecular solution, one teaspoonful three times a day in a glass of water, is unusually efficacious. I shall appreciate any information you can give me on this subject.**

H. H. Gay, M.D., Midland, Mich.

ANSWER.—Whatever action potassium permanganate has is due largely to its ability as an oxidizing agent, provided it is present in adequate quantities. Solutions of potassium permanganate have been used for destruction of morphine or strychnine, provided the poison is still in the stomach; but it should not be employed to the exclusion of gastric lavage. One thousand cc. (1 quart) of a 1:2,000 solution is used to wash the stomach, and it must be evacuated after a few minutes. It usually is of little value when the stomach contains much organic matter, but morphine and physostigmine are decomposed readily even in the presence of organic matter. In snake bite permanganate may be used to wash the incised wound and also to inject immediately around it, but little or none of the permanganate diffuses through the tissue, and it has no effect on any poison that has been absorbed. Potassium permanganate is a deodorant, germicide, irritant and astringent. It is used on mucous membranes, especially of the urethra, in dilutions of from 1:5,000 to 1:1,000. It has been used to disinfect the hands in surgery. The hand is dipped into the disinfectant solution until it is mahogany brown and then dipped into a warm saturated solution of oxalic acid and rinsed in sterile water. Solution of 1:500 is applied externally for excessive sweating of the feet (Useful Drugs). There are no indications other than those already given for the oral administration of the product. It is difficult to believe that it would be of any use for treatment in coryza or cutaneous abscesses. Potassium permanganate naturally reacts to the contents of the stomach, forming manganese compounds such as manganese oxide and possibly manganese chloride. Of late years it has been pointed out particularly that manganese as a metal is a dangerous substance, especially when it enters the body in the form of dust by inhalation. When a workroom or mine contains as much as 2 mg. of manganese dioxide per cubic foot of air, severe poisoning may arise after long exposure. Lately there has come into prominence in some European countries a form of pneumonia attributed to manganese. This arises solely in towns or cities harboring manganese industries. However, persons not employed in the manganese industries apparently readily acquire the disease, owing to manganese dusts discharged into the general atmosphere. Low quantities of manganese have produced this form of pneumonia in experimental animals. While there is no proof that the oral intake of manganese will induce this condition, it seems likely that this substance will in the future be regarded as more dangerous than heretofore. Manganese pneumonia is well described in the "Proceedings and Papers of the Eighth International Congress for Industrial Medicine and Occupational Diseases" held in Frankfort on the Main Sept. 26-30, 1938 (Leipzig, Georg Thieme, 1939) through three contributions, as follows:

1. Beobachtungen über Manganpneumonien, by Dr. D. Elstadt, Oslo, **2**: 1014.
2. Die Manganpneumonie, by Prof. Dr. H. E. Büttner, Gorlitz, **2**: 1022.
3. Experimentelles zur Thomasschlackenstaub und Manganpneumonie, by Prof. Dr. K. W. Jotten und Dozent Dr. H. Reploh, Münster, **2**: 1028.

SANOCRYSIN AND DREYER'S ANTIGEN IN TUBERCULOSIS

To the Editor:—**Please give the merits and demerits of treatment of tuberculosis by sanocrysin and Dreyer's defatted antigen.**

M.D., Arizona.

ANSWER.—Since Möllgaard published the results of his study of sanocrysin and claimed its specifically curative effect in tuberculosis, the drug has been tried on patients by many investigators. There is no uniform opinion as to its place as a therapeutic agent. The predominant opinion in this country is that the drug is of little use.

Investigation has shown that the action of sanocrysin is due to stimulation of the natural defenses of the body and is not bactericidal, as proposed by Möllgaard. The cases most favorably affected are the acute or subacute types. Because it is difficult to determine the type that will react unfavorably, the treatment must be started with small doses and be increased according to the patient's tolerance. It has been found that patients with fibroid lesions are not benefited by the drug. Bronchopneumonic lesions pursuing an acutely progressive course are harmed by sanocrysin.

Various disturbing reactions have been observed in a large proportion of cases during the treatment which indicate that sanocrysin is not a safe remedy. The complications encountered are chiefly those of heavy metal poisoning. Vomiting and hiccup difficult to control may occur soon after the injection. Persistent high fever, gastric derangement, diarrhea and cutaneous eruptions have been frequently observed. Albuminuria, hematuria and symptoms of shock and collapse have been noted. There is strong evidence that sanocrysin affected unfavorably the trend of the disease and that it exerted harmful systemic effects because of its toxicity.

Dreyer in 1923 announced a diaplyte vaccine produced by treating killed tubercle bacilli with solution of formaldehyde and acetone. His work was based on slight experimental evidence. It has been shown to be capable of stirring up tissue reactions which resulted in active tubercle formation with caseation. Any supposed benefits were limited to a short period of time.

EPISCLERITIS PERIODICA FUGAX

To the Editor:—**For many years a patient has had episcleritis periodica fugax. She has had numerous treatments, including opening of the sinuses, removal of the teeth, appendectomy, hysterectomy, tuberculin injections, allergy elimination diets, autogenous vaccines from the nose, sulfanilamide, gynergen and protein shock therapy and many examinations including x-ray examinations of the chest and gastrointestinal tract, determination of the basal metabolic rate, sugar tolerance tests and the like. No cause has ever been discovered, nor has there been any favorable effect on the disease. Now the patient is desperate. Have you any suggestions?**

M.D., Louisiana.

ANSWER.—The best description of episcleritis periodica fugax is to be found in the second volume of Duke-Elder's Textbook of Ophthalmology of 1938. There is considerable space devoted to the discussion of the etiology of the condition and the author concludes with the following sentence: "The only treatment of value is systemic treatment, for local treatment is usually quite without effect." The one phase of etiology not sufficiently emphasized is that of a tuberculous allergy, which is apparently the cause in many cases. Long continued courses of tuberculin for desensitization have proved to be curative in some cases.

PNEUMOPERITONEUM FOR TUBERCULOUS ADHESIONS

To the Editor:—**Will you kindly tell me the status of air inflation treatment done repeatedly in the hope of releasing abdominal adhesions from an old tuberculous peritonitis? How and when should it be done? Is there any proof of relief of obstructive symptoms?**

Elizabeth Ford Love, M.D., Moorestown, N. J.

ANSWER.—The introduction of air into the peritoneal cavity, known as pneumoperitoneum, has been used for approximately a third of a century. It was originally employed primarily in the treatment of tuberculous peritonitis, since there was a belief that this condition was frequently brought under control by allowing air to enter the peritoneal cavity during laparotomy. It has also been used rather extensively in the treatment of intestinal tuberculosis.

Pneumoperitoneum is frequently instituted in an attempt to elevate and partially immobilize the diaphragm, the thought being to bring about partial rest of the diseased lung, as is believed to occur during pregnancy. It is also used in various diagnostic procedures. Probably pneumoperitoneum is valuable in the prevention of adhesions while tuberculous peritonitis is being brought under control, but it is extremely doubtful whether it is of any value in releasing abdominal adhesions from an old tuberculous peritonitis. The only possibility would be that it might change the position of abdominal organs, particularly parts of the intestine, to relieve the obstructive symptoms partially. If such symptoms are severe, however, one should not rely on pneumoperitoneum but should resort to surgical methods. There is one danger that should be kept in mind constantly when one attempts to introduce air into the peritoneal cavity, and it is particularly great if adhesions are present; it is the introduction of the air into a blood vessel. Patients have died almost instantly from air embolism while pneumoperitoneum was being attempted. To determine just when the needle is in free peritoneal space is more difficult than in the case of the pleural space, on account of the high negative pressure in the latter. When pneumoperitoneum is to be instituted, an ordinary artificial pneumothorax needle or instrument may be introduced approximately an inch to the right or left and one-half inch below the umbilicus. This area usually avoids the penetration of large blood vessels in the abdominal wall. When one is certain that the needle is in the peritoneal space, air may be introduced by the ordinary artificial pneumothorax equipment. Usually from 300 to 500 cc. suffices for each treatment. Percussion over the liver while the treatment is being instituted will usually result in a change from a flat to a somewhat resonant note if the air is reaching the peritoneal cavity.

GASTRIC CARCINOMA

To the Editor:—**Of all gastric carcinomas, how many occur above the pyloric area? What is the usual type that occurs in the upper section of the stomach? Is there an accepted "classic symptomatology" of upper gastric carcinoma? What percentage of surgical cures has been reported?**

M.D., Indiana.

ANSWER.—The incidence of gastric carcinoma above the antrum has been found to be about 50 per cent in many large series of surgically resected and postmortem specimens. When the lesser curvature is included, the figure rises to about 75 per cent. Some authors, among them Konjetzny, believe that many carcinomas of the lesser curvature are often carcinomas of the antrum with secondary extension along the lesser curvature. Konjetzny (Der Magenkrebs, Stuttgart, Ferdinand Enke, 1938, p. 158) in a series of resected specimens found only 18 per cent of the carcinomas to have arisen above the antrum.

Gastric carcinoma rarely causes characteristic early symptoms. Those above the antrum are no exception. Symptoms are often insignificant even when the lesion has progressed beyond the resectable stage. This is especially true of carcinoma of the fundus. On the other hand, carcinoma of the cardia may give relatively early symptoms of esophageal obstruction, but because of its surgical inacessibility the earlier diagnosis leaves the poor prognosis unaltered. Later symptoms are usually not characteristic of the region of the stomach involved.

A variety of pathologic types of gastric carcinoma occur above the antrum and will be discussed together with surgical cures.

Surgical cures reported amount to from 1 to 5 per cent of all gastric carcinoma seen in large clinics. This figure, however, is misleading in an individual case, because in cases in which the lesion can be resected Balfour (*Surg., Gynec. & Obst.* **54**:312 [Feb., No. 2A] 1932) reports 20 per cent to be ten year cures. Carcinomas above the antrum include those with the best and also those with the poorest prospect of surgical cure. As a group, carcinomas of the body and greater curvature (from 10 to 15 per cent of all gastric carcinomas) offer the best hope for surgical cure. The borders are usually sharply demarcated, metastases are relatively late, and they are surgically accessible. Malignant linitis plastica or carcinoma fibrosum, found in less than 2 per cent of Minnes and Geschickter's series of 541 cases (*Am. J. Cancer* **27**:740 [Aug.] 1936), is seldom cured. At operation it is difficult to differentiate involved from uninvolved areas, and even when a wide resection is done considerable carcinomatous tissue remains behind. Carcinoma of the cardia and fundus have poor prospects for surgical cure. Those of the lesser curvature are intermediate in the possibility of a cure, depending on the proximity to the cardia on one hand and the involvement of neighboring structures on the other. Carcinoma in this location metastasizes and invades adjacent organs relatively early.

PROBABLE ACUTE ULCUS VULVAE

To the Editor:—**Thirteen months ago small blisters began to develop on the vulva of a girl aged 9 years. These lesions appeared at intervals of from seven to fourteen days and required from three to ten days to heal. I first saw the child four months ago. At that time the mucous membrane of the vulva appeared thin, and there were two or three tiny cracks near the clitoris. On the right labium majus there was a blister 1.5 by 1 cm. This was filled with a serosanguineous fluid. The mucous membrane over the blister broke after a few hours, leaving a shallow denuded area. This gave the child no discomfort, except on voiding, when the urine caused considerable burning and pain. The Wassermann reaction was negative; examination of the stool was negative for parasites. The child's weight was 77 pounds (35 kg.), which is 10 pounds (4.5 kg.) above the average for her age and height. The vaginal smear is negative for gonorrhea, for Trichomonas vaginalis and for monilia. Examination of the urine was negative for sugar on the first three examinations. On several occasions since, however, a trace of sugar has been found. This can be controlled by moderate limitation of carbohydrates. Treatment has been unsuccessful. She was given estrogenic substance as a suppository and has had local treatments with gentian violet, silver nitrate and silver picrate to no avail. I would appreciate any suggestions as to diagnosis and treatment.** **M.D., Alabama.**

ANSWER.—The blisters in this case may represent retention cysts of the sweat or sebaceous glands about the vulva, or they may be herpes genitalis. The latter has a tendency to recur and is usually located on the labia minora. Trauma such as from masturbation must be ruled out, particularly because of the presence of the tiny cracks near the clitoris. The most likely diagnosis, however, is ulcus vulvae acutum, first described by Lipschütz in 1913. The blisters in the present case may represent a prodromal stage of this disease. Wien and Perlstein (THE JOURNAL, Feb. 6, 1932, p. 461), who reported one of the first American cases, point out that the disease is characterized by the presence of ulcers which appear suddenly in the mucous membrane of the vulva or adjacent region in which Bacillus crassus is constantly found. This organism is apparently identical with Döderlein's vaginal bacillus. The lesions involute spontaneously after varying lengths of time with slight or no scar formation, depending on the depth of ulceration.

In the case reported by Wien and Perlstein, the lesions occurred in definite cycles directly related to the physical condition of the patient. Fatigue, nervous exhaustion and mild infections of the upper respiratory tract predisposed to the occurrence of the lesions.

The treatment is usually simple. The lesions heal quickly when treated with mild antiseptic washes or compresses. The persistent application of aluminum acetate packs to the vulva daily for a month will usually give permanent relief. Attention should also be paid to the patient's general physical condition, her diet, her periods of rest and her environment.

ARGYLL ROBERTSON PUPIL

To the Editor:—**Is it possible to dilate a true syphilitic Argyll Robertson pupil adequately with a cycloplegic? Will the pupil return to normal after the patient has been cured by antisyphilitic treatment. If so, why?**

Robert Emmet Jameson, M.D., Davenport, Iowa.

ANSWER.—In the article by Merritt and Moore (The Argyll Robertson Pupil: An Anatomic-Physiologic Explanation of the Phenomenon, with a Survey of Its Occurrence in Neurosyphilis, *Arch. Neurol. & Psychiat.* **30**:357 [Aug.] 1933) is quoted the original description by Argyll Robertson of the pupillary phenomenon which bears his name. In the quotation appears this statement: "Strong solutions of atropine only induced a medium dilatation of the pupil." The imperfect dilatation of the Argyll Robertson pupil in response to installations with cycloplegics is characteristic of paralysis in the sympathetic innervation of the eye.

There are scattered reports of the return to normal of true Argyll Robertson pupils after artificial fever therapy in syphilis

of the central nervous system but, so far as is known, not after other forms of antisyphilitic treatment. Why the Argyll Robertson pupil should return to normal under such circumstances or indeed under any other circumstances is not known, since the exact mechanism of its production is also unknown.

SUSPECTED CERVICAL CARCINOMA AND BIOPSY

To the Editor:—What are the dangers in taking a biopsy with a cautery or knife in a case of tumor of the cervix which is probably malignant? My situation up here is such that with present facilities I am not able to do a microscopic section and all specimens are sent to the States. In a case of cancer would this tend to spread it, and if so is the danger great enough to warrant sending the patient out or doing a total hysterectomy rather than taking a biopsy and waiting a month? What would be the best way to make a biopsy to prevent spread? Would a loop on a diathermy be better than a cautery and how much better is that than a knife? Is it true that after cautery the lymph flow is to the wound and that after the knife it is away from the wound? What is the danger of dilating the cervical canal in the presence of a possible malignant growth in order to see it better?

David Hoehn, M.D., Fairbanks, Alaska.

ANSWER.—There is no definite evidence that there is danger in performing a biopsy on a carcinoma of the cervix with a sharp scalpel or cautery, provided the procedure is executed carefully. The danger of spreading the disease after biopsy in relation to the time interval between biopsy and therapy is a controversial question. On the whole, experience indicates that it is best to execute the therapeutic procedure as soon after the biopsy as possible. In mentioning the question of hysterectomy it is assumed that there are no facilities for irradiation available. As to the choice of waiting a month or performing a hysterectomy, a decision must naturally be made in each individual case. This would depend on the clinical examinations. In doubtful cases, waiting is certainly preferable. A diathermy loop is an excellent way of performing biopsy for suspected carcinoma of the cervix. A knife is perfectly satisfactory if the procedure is executed carefully. There is no acceptable evidence that after the use of cautery the lymph flow is to the wound and that after the use of the knife it is away from the wound. Careful dilation of the cervical canal may be performed in cases of suspected carcinoma of the cervix without danger.

PULMONARY ACTINOMYCOSIS

To the Editor:—At present we have in our children's pavilion a 5 year old white boy who has pulmonary actinomycosis, proved by culture of pus obtained by aspiration. Could you give us any information as to the value of sulfanilamide or sulfapyridine or of iodides with or without thymol? What about surgical treatment; e. g., drainage or lobectomy or pneumonectomy? Any information or references would be appreciated.

Samuel A. Jaffe, M. D., New Haven, Conn.

ANSWER.—There is no undisputed evidence to show the specific beneficial effect of any of the drugs mentioned. The use of iodine salts is, of course, traditional. A few patients have been treated with thymol (Myers, H. B.: THE JOURNAL, May 29, 1937, p. 1875) and two with sulfanilamide (Miller, E. M., and Fell, E. H., *ibid.*, Feb. 25, 1939, p. 731. Hall, W. E. B., *ibid.*, May 27, p. 2190), all with apparently good results, but conclusions drawn from such limited experiences can be only suggestive. Surgical removal of infected material, when possible, and the curettage and evacuation of dead tissue in the visceral forms have also given good results (Wangensteen, O. H.: *Ann. Surg.* **104**:752 [Oct.] 1936). Drainage, lobectomy and pneumonectomy would therefore seem to be worth trying, provided the infection is localized. General symptomatic treatment such as that practiced for the treatment of tuberculosis is of great importance.

CALCANEAL SPURS

To the Editor:—Can you give me any information concerning the injection method with sodium morrhuate for calcaneal spurs? M.D., Arizona.

ANSWER.—Many substances have been used as injection material to give relief from painful heels. Some of these patients have calcaneal spurs, others have not. An important consideration is the relationship of calcaneal bursitis to painful heels. Many of the patients who complain of painful heels have calcaneal bursitis. There is no doubt that the injection has relieved many patients; in some cases it has made them worse. One must realize that any injection in and around the periosteum of a bone is apt to cause considerable pain. Many of the patients who have been relieved by injection therapy have been relieved by the interfiltration of the spur bearing area, in which area there may be a bursa.

Reference:

Lewin, Philip: Calcaneal Spurs, *Arch. Surg.* **12**: 117 (Jan.) 1926.

DANGERS OF MERCURIC OXYCYANIDE

To the Editor:—Is there any danger of absorption of mercuric oxycyanide through the skin? I use it in the strength of 1: 1,000 and frequently pick up instruments without having my rubber gloves on. Is there any danger from the vapor that arises from this solution? M.D., Idaho.

ANSWER. — Mercuric oxycyanide is described in New and Nonofficial Remedies as "a basic-mercuric salt of hydrocyanic acid, containing from 51.7 to 56.0 per cent of mercuric cyanide [$Hg(CN)_2$] and from 44.3 to 48.0 per cent of mercuric oxide (HgO)." It is generally used in strengths of from 1 : 500 to as high as 1 : 10,000. If taken internally, the product is naturally toxic. The substance has been used as an antiseptic and in the treatment of syphilis more frequently in the past than in the present. Severe acute intoxications have been reported following its use in irrigating sinuses and hollow viscera. In general, it appears that the prospects of cutaneous absorption of mercuric oxycyanide are no greater than for many other mercury compounds widely used for disinfectant purposes. The small quantities of vapors that may arise from a solution of mercuric oxycyanide seem to be without significance.

INTERSTITIAL KERATITIS AND TRAUMA

To the Editor:—A patient had a foreign body embedded in the cornea for three days. The foreign body was removed and a small area of keratitis developed about the site of the foreign body. Within a few days an interstitial keratitis developed and the patient was found to have a 4 plus Wassermann reaction. Is it not probable that the foreign body excited a latent interstitial keratitis? Cannot an irritating substance cause a flare-up of a latent interstitial keratitis in a syphilitic patient?

M.D., New York.

ANSWER.—This question raises one of the most interesting and unanswerable medicolegal problems. It is a well known fact that a comparatively minor trauma may be the exciting factor of a typical syphilitic interstitial keratitis and it is equally well known that the majority of cases of interstitial keratitis develop without the history of any preceding trauma. This question is discussed at length, with bibliography and citation of cases, in "Injuries of the Eye" by H. V. Würdemann, second edition, published by C. V. Mosby Company in 1932, page 433. According to various authors, anywhere from 3 to 20 per cent of all cases are precipitated by trauma, which may be of such minor nature as merely the instillation of irritating drops. But since practically all cases of interstitial keratitis are bilateral and the supposedly exciting trauma is usually monocular, the importance of injury as an etiologic factor must be denied. Furthermore, there is no evidence that the disease would not have developed without the trauma.

PRESCRIPTION MIXTURES

To the Editor:—Would there be any objection to the mixture of elixir of sodium thiocyanate with aromatic fluidextract of cascara sagrada and of elixir of sodium thiocyanate with elixir of phenobarbital? Would such a mixture be stable? C. L. Attaway, M.D., Villa Platte, La.

ANSWER.—The elixir of sodium thiocyanate and the aromatic fluidextract of cascara sagrada will form a homogeneous mixture which will not precipitate and which is stable. The same is true of the mixture of the elixir of sodium thiocyanate and the elixir of phenobarbital.

A possible objection to the first mixture would be that there is a combination of a sedative and a laxative in fixed proportions. In cases in which the sodium thiocyanate might presumably be used three times a day, the administration of cascara sagrada might frequently be objectionable. This objection does not apply to the second mixture if small enough amounts of the elixir of phenobarbital are used so that the mixture is not too depressing.

ASTIGMATIC DIAL IN REFRACTIONS

To the Editor:—What is the opinion among ophthalmologists concerning the use and accuracy of the Robinson-Cohen slide in routine refraction, both as a subjective test and under a cycloplegic? M.D., Ohio.

ANSWER.—The Robinson-Cohen slide is a refinement of the astigmatic dial that is used by a number of ophthalmologists. It requires the use of the projection type of visual testing apparatus and changing of the slide when it is used. It is one of the most desirable methods of using the astigmatic dial and, in the hands of a careful worker, is a useful addition to the refractive equipment. Many refractionists will not take the necessary time to make it useful. It is to be used, of course, in conjunction with other means of testing.

Medical Examinations and Licensure

COMING EXAMINATIONS

NATIONAL BOARD OF MEDICAL EXAMINERS
SPECIAL BOARDS

Examinations of the National Board of Medical Examiners and Special Boards were published in THE JOURNAL, Nov. 4, page 1757.

STATE AND TERRITORIAL BOARDS

ALABAMA: Montgomery, June 18-20. Sec., Dr. J. N. Baker, 519 Dexter Ave., Montgomery.

ARIZONA: *Basic Science.* Tucson, Dec. 19. Sec., Dr. Robert L. Nugent, University of Arizona, Tucson.

CALIFORNIA: *Oral examination* (required when reciprocity application is based on a state certificate or license issued ten or more years before filing application in California), San Francisco, Nov. 15. Sec., Dr. Charles B. Pinkham, 420 State Office Bldg., Sacramento.

CONNECTICUT: *Medical (Regular). Examination.* Hartford, Nov. 14-15. *Endorsement.* Hartford, Nov. 28. Sec., Dr. Thomas P. Murdock, 147 W. Main St., Meriden. *Medical (Homeopathic).* Derby, Nov. 14-15. Sec., Dr. Joseph H. Evans, 1488 Chapel St., New Haven.

DELAWARE: *Examination.* Dover, July 9-11. *Reciprocity.* Dover, July 10. Sec., Medical Council of Delaware, Dr. Joseph S. McDaniel, 229 S. State St., Dover.

FLORIDA: Jacksonville, Nov. 13-14. Sec., Dr. William M. Rowlett, Box 786, Tampa.

INDIANA: Indianapolis, June 18-20. Sec., Board of Medical Registration and Examination, Dr. J. W. Bowers, 301 State House, Indianapolis.

IOWA: *Basic Science.* Des Moines, Jan. 9. *Medical.* Des Moines, Dec. 4-6. Dir., Division of Licensure and Registration, Mr. H. W. Grefe, State Department of Health, Capitol Bldg., Des Moines.

KANSAS: Topeka, Dec. 12-13. Sec., Board of Medical Registration and Examination, Dr. J. F. Hassig, 905 N. 7th St., Kansas City.

KENTUCKY: Louisville, Dec. 5-7. Sec., State Board of Health, Dr. A. T. McCormack, 620 S. Third St., Louisville.

MAINE: Portland, Nov. 14-15. Sec., Board of Registration of Medicine, Dr. Adam P. Leighton, 192 State St., Portland.

MARYLAND: *Regular.* Baltimore, Dec. 12-15. Sec., Dr. John T. O'Mara, 1215 Cathedral St., Baltimore. *Homeopathic.* Baltimore, Dec. 12-13. Sec., Dr. John A. Evans, 612 W. 40th St., Baltimore.

MASSACHUSETTS: Boston, Nov. 14-16. Sec., Board of Registration in Medicine, Dr. Stephen Rushmore, 413-F State House, Boston.

MISSISSIPPI: *Reciprocity.* Jackson, December. Asst. Sec., State Board of Health, Dr. R. N. Whitfield, Jackson.

NEBRASKA: Lincoln, Nov. 24-25. Dir., Bureau of Examining Boards, Mrs. Clark Perkins, 1009 State Capitol Bldg., Lincoln.

NEW HAMPSHIRE: Concord, March 14-15. Sec., Dr. T. P. Burroughs, State House, Concord.

NEW YORK: Albany, Buffalo, New York, Syracuse, Jan. 29-Feb. 1. Chief, Bureau of Professional Examinations, Mr. Herbert J. Hamilton, 315 Education Bldg., Albany.

NORTH CAROLINA: *Reciprocity and Endorsement.* Raleigh, Dec. 11. Sec., Dr. W. D. James, Hamlet.

NORTH DAKOTA: Grand Forks, Jan. 2-5. Sec., Dr. G. M. Williamson, 4½ S. Third St., Grand Forks.

OHIO: Columbus, Dec. 5-7. Sec., Dr. H. M. Platter, 21 W. Broad St., Columbus.

OKLAHOMA: Oklahoma City, Dec. 13. Sec., Dr. James D. Osborn Jr., Frederick.

OREGON: *Basic Science.* Portland, Feb. 24. Sec., State Board of Higher Education, Mr. Charles D. Byrne, University of Oregon, Eugene.

PENNSYLVANIA: Philadelphia, January. Dir., Bureau of Professional Licensing, Dr. James A. Newpher, Department of Public Instruction, 358 Education Bldg., Harrisburg.

SOUTH CAROLINA: Columbia, Nov. 14. Sec., Dr. A. Earle Boozer, 505 Saluda Ave., Columbia.

SOUTH DAKOTA: Pierre, Jan. 16-17. Dir., Medical Licensure, Dr. G. J. Van Heuvelen, State Board of Health, Pierre.

TEXAS: Austin, Nov. 20-22. Sec., Dr. T. J. Crowe, 918-19-20 Mercantile Bldg., Dallas.

VERMONT: Burlington, Feb. 13-15. Sec., Board of Medical Registration, Dr. W. Scott Nay, Underhill.

VIRGINIA: Richmond, Dec. 13. Sec., Dr. J. W. Preston, 30½ Franklin Road, Roanoke.

WISCONSIN: *Basic Science.* Milwaukee, Dec. 2. Sec., Professor Robert N. Bauer, 3414 W. Wisconsin Ave., Milwaukee. *Medical.* Madison, Jan. 9-11. Sec., Dr. E. C. Murphy, 314 E. Grand Ave., Eau Claire.

Iowa Reciprocity and Endorsement Report

Mr. H. W. Grefe, director, Division of Licensure and Registration, reports forty-six physicians licensed by reciprocity and three physicians licensed by endorsement from January 20 through September 21. The following schools were represented:

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
College of Medical Evangelists		(1930)	California
Loyola University School of Medicine		(1930)	Illinois
Northwestern University Medical School		(1938)	Wisconsin, (1939) Illinois
Rush Medical College		(1937)	Illinois
University of Illinois College of Medicine		(1932)	Missouri
Indiana University School of Medicine		(1930)	Indiana
University of Kansas School of Medicine		(1930), (1935, 2)	Kansas
University of Louisville School of Medicine		(1935), (1936)	Kentucky, (1936) Nebraska
University of Michigan Medical School		(1930)	Michigan
University of Minnesota Medical School		(1933), (1937), (1938)	Minnesota
Washington University School of Medicine		(1935)	Missouri
St. Louis University School of Medicine		(1914)	Oklahoma, (1926) Missouri, (1934) Kansas
Creighton University School of Medicine		(1921), (1925), (1934), (1935), (1938)	Nebraska, (1933) South Dakota
University of Nebraska College of Medicine		(1918), (1931), (1936), (1937, 2)	Nebraska
University of Cincinnati College of Medicine		(1935)	Ohio
Jefferson Medical College of Philadelphia		(1933)	New Jersey
University of Pennsylvania School of Medicine		(1933, 2)	Minnesota
University of Pittsburgh School of Medicine		(1933)	Minnesota
Meharry Medical College		(1938)	Tennessee
University of Tennessee College of Medicine		(1931)	W. Virginia, (1935) Tennessee
Marquette University School of Medicine		(1923)	Wisconsin
University of Wisconsin Medical School		(1937)	Wisconsin
University of Manitoba Faculty of Medicine		(1932)	Minnesota
Friedrich-Wilhelms-Universität Medizinische Fakultät, Berlin		(1934)	New York
Universität Rostock Medizinische Fakultät		(1934)	Colorado

School	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
College of Medical Evangelists		(1937)	N. B. M. Ex.
Yale University School of Medicine		(1935)	N. B. M. Ex.
McGill University Faculty of Medicine		(1931)	N. B. M. Ex.

Ohio Reciprocity and Endorsement Report

Dr. H. M. Platter, secretary, Ohio State Medical Board, reports forty-six physicians licensed by reciprocity and two physicians licensed by endorsement, July 18, 1939. The following schools were represented:

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
George Washington University School of Medicine		(1908)	Illinois
Howard University College of Medicine		(1937)	Tennessee
Emory University School of Medicine		(1935), (1937)	Georgia
Northwestern University Medical School		(1936)	Indiana
Rush Medical College		(1925)	Illinois
The School of Medicine of the Division of Biological Sciences		(1935)	Michigan
Indiana University School of Medicine		(1938)	Indiana
State University of Iowa College of Medicine		(1935)	Iowa
University of Kansas School of Medicine		(1936)	Kansas
University of Louisville School of Medicine		(1938, 3)	Kentucky
Johns Hopkins Univ. School of Med.		(1919), (1934), (1938)	Maryland
Harvard Medical School		(1929)	W. Virginia, (1934) N. Carolina
University of Michigan Med. School		(1921), (1929), (1933), (1934), (1935)	Michigan
Wayne University College of Medicine		(1939)	Michigan
St. Louis Univ. School of Medicine		(1932), (1936), (1937)	Missouri
University of Nebraska College of Medicine		(1932), (1938, 2)	Nebraska
University of Buffalo School of Medicine		(1934)	New York
University of Rochester School of Medicine		(1938)	New York
Eclectic Medical College, Cincinnati		(1918)	Kentucky
Hahnemann Med. College and Hospital of Philadelphia		(1938)	Maryland
University of Pennsylvania School of Medicine		(1937)	New York
Tennessee Medical College		(1900)	Kentucky
University of Tennessee College of Medicine		(1925)	Tennessee
Vanderbilt Univ. School of Med.		(1935) Connecticut (1938)	Tennessee
Marquette University School of Medicine		(1938)	Wisconsin
Karl-Franzens-Universität Medizinische Fakultät, Graz		(1932)	New York
Medizinische Fakultät der Universität Wien		(1926)	Louisiana
Johann Wolfgang Goethe-Universität Medizinische Fakultät, Frankfurt-am-Main		(1923)	Maryland
Ludwig-Maximilians-Universität Medizinische Fakultät, München		(1916)	New York
Regia Università degli Studi di Roma. Facoltà di Medicina e Chirurgia		(1935)	Maryland, New York

School	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
Rush Medical College		(1926)	N. B. M. Ex.
University of Edinburgh Faculty of Medicine		(1937)	N. B. M. Ex.

Michigan Indorsement Report

Dr. J. Earl McIntyre, secretary, Michigan State Board of Registration in Medicine, reports sixty-nine physicians licensed by indorsement from January 3 through July 28, 1939. The following schools were represented:

School	LICENSED BY INDORSEMONT	Year Grad.	Indorsement of
University of Arkansas School of Medicine		(1938, 2)	Arkansas
College of Medical Evangelists		(1934), (1936)	California, (1934) Colorado
University of Colorado School of Medicine		(1938, 2)	Colorado
Howard University College of Medicine		(1936)	Tennessee
Bennett College of Eclectic Medicine and Surgery		(1911)	Illinois
Loyola University School of Medicine		(1919), (1926), (1933)	Illinois, (1928) California, (1931) Ohio
Northwestern University Medical School		(1935)	Kansas, (1936) Wisconsin, (1938) Illinois
Rush Medical College		(1933), (1935, 2)	Illinois
The School of Medicine of the Division of Biological Sciences		(1936)	Illinois
University of Illinois College of Medicine		(1926), (1938)	Illinois
Indiana University School of Medicine		(1934), (1937, 2)	Indiana
State Univ. of Iowa College of Medicine		(1937, 2), (1938, 2)	Iowa
University of Kansas School of Medicine		(1933)	Kansas
University of Louisville School of Medicine		(1934), (1938,2)	Kentucky
Tulane University School of Medicine		(1938)	Louisiana
Johns Hopkins University School of Medicine		(1936)	Maryland
University of Maryland School of Medicine and College of Physicians and Surgeons		(1935)	Maryland

Harvard Medical School	(1937)	Penna.
Tufts College Medical School	(1931)	Maine
Washington University School of Medicine	(1934)	Missouri
University of Nebraska College of Medicine (1934, 2),	(1937)	Nebraska
Ohio State University College of Medicine	(1931), (1937)	Ohio
Western Reserve University School of Medicine	(1938, 2)	Ohio
University of Oklahoma School of Medicine	(1937)	Oklahoma
Jefferson Med. College of Philadelphia (1931), (1934), (1936) (1935)		Penna., West Virginia
Temple University School of Medicine	(1933)	N. Jersey
University of Pennsylvania School of Medicine	(1936)	Penna.
Woman's Medical College of Pennsylvania	(1938)	Ohio
Meharry Medical College (1928)	(1924), (1934), (1936)	Tennessee, Illinois
University of Tennessee College of Medicine	(1936), (1937, 2)	Tennessee
Baylor University College of Medicine	(1937)	Texas
University of Texas School of Medicine	(1935), (1938)	Texas
Univ. of Virginia Department of Medicine	(1932), (1938)	Virginia
Marquette University School of Medicine	(1921)	Wisconsin
University of Wisconsin Medical School	(1934)	Wisconsin

Book Notices

End-Results in the Treatment of Gastric Cancer: An Analytical Study and Statistical Survey of Sixty Years of Surgical Treatment. By Edward M. Livingston, B.Sc., M.D., Associate Visiting Surgeon, Bellevue Hospital, New York, and George T. Pack, B.Sc., M.D., F.A.C.S., Attending Surgeon, Memorial Hospital, New York City. With a foreword by Bowman C. Crowell, M.D., Associate Director, American College of Surgeons. Cloth. Price, $3. Pp. 179, with 7 illustrations. New York & London: Paul B. Hoeber, Inc., 1939.

This book is a statistical survey and analytic study of the surgical treatment of cancer of the stomach. The history of the surgical attack on this dread condition, as it has been revealed in medical literature, is traced in detail from the first successful gastrectomy by Billroth in 1881. The previous history is briefly reviewed and the authors come quickly to a minute consideration of the Therapeutic Era, which began over a half century ago. The first "classic study of Welch" (1885) is reviewed, which contained the pessimistic summary that "no patients subjected to resection survived longer than a year and a half." Some of the later reports are then surveyed and, comparing reports, Livingston and Pack pose the arresting question: "How could there be but three five year survivals in the quarter century in so prominent an institution as the Johns Hopkins Hospital up to 1915, then a report from another clinic but a relatively few years thereafter, of 127 ten year survivals?"

This question they themselves then undertake to answer in an analysis of the various factors, frequently overlooked, that make the reports of a number of "cures" apparently so contradictory. Thus it is pointed out that the number of "cures" that can be reported depends on the number of total patients seen, on the number considered operable, on the number considered resectable, on the period elapsed since operation, on the completeness of follow-up and on the mortality rates from other causes than cancer as well as on the survival from gastric cancer itself. Since one or more of these factors may be vastly different in different experiences, the number of reported cures also will differ. These points are elaborated and illustrated statistically by Livingston and Pack in considerable detail and with great acumen, and they categorize what are the primary requisites for cancer survival statistics if they are to be meaningful. When various reports from different sources are tabulated in a consistent way, it is found that there is actually a close agreement between the results of various authors and that the outlook for patients who have a partial resection for gastric carcinoma, while surely not rosy, is vastly better than that exemplified in the first classic report of Welch and considerably better than is commonly assumed. More than 14,000 partial gastrectomies for gastric carcinoma reported in the literature are included in the review.

A striking feature of the work is contained in a supplement of eighty-nine pages of charts, giving the statistical facts adduced in graphic form. These are admirably conceived and executed and should be useful for general lectures and public education. A second supplement of twelve pages gives in tabular form a review of the series studied and the main summary statistical facts of each. A third supplement lists a bibliography of 358 items. Curiously this does not list the last report of the experience of the Mayo Clinic by Balfour, (*Ann. Surg.* **105**:733 [May] 1937) although certain statistics in the text and charts appear to have been obtained from this article. Apparently this is due to a clerical error.

Altogether this work is to be recommended as an exhaustive, painstaking and thoughtful review of a subject of tremendous importance. It should serve to correct a considerable number of misconceptions regarding the statistical facts respecting end results in the surgical treatment of gastric cancer.

Studies on the Changing Incidence of Peptic Ulcer of the Stomach and Duodenum. By Gunnar Alsted, M.D., Privat-docent at the University of Copenhagen, Copenhagen. With a preface by Professor E. Meulengracht. Cloth. Price, 10s. Pp. 148, with 12 illustrations. Copenhagen: Einar Munksgaard; London: Oxford University Press, 1939.

Alsted thinks the evidence is sufficient to warrant the conclusion that duodenal ulcer in contrast to gastric ulcer was rare up to the early part of the present century. On the basis of a review of early and more recent Danish and foreign clinical material he believes that a reversal in the sex incidence of peptic ulcer has taken place. In earlier times the proportion of men to women was 1:5 or 1:6, at the beginning of the present century it was 1:1 and since 1920 it has been 3:1. Duodenal ulcer in his opinion is rapidly increasing in both sexes, especially in men, whereas acute gastric ulcers are rapidly decreasing, especially in women (page 112). Then, in apparent contradiction to this observation, he says (page 135) "Nowadays no more men get ulcers than previously, but there are more who have them." In other words, there are more men who suffer from the disease at the same time. The supposed increase in the frequency of ulcer is apparently due to an improved diagnostic technic and growing number of readmissions. He appropriately observes that ulcers seem to be more chronic than formerly and to be principally localized in the pyloric and duodenal regions. The absolute frequency of gastric hemorrhages occurring in all the public hospitals in Copenhagen is investigated for the period 1876 to 1935. It is shown that there was a marked increase in the frequency of melena, especially in men, as well as some increase in the frequency of hematemesis. In spite of this increase, these hemorrhages appeared to be less massive and fatal than those of an earlier period. Alsted does not feel that the changes in the clinical manifestations, pathologic characteristics and frequency of ulcer can be traced to any one factor. The changes which have taken place throughout the world in the last fifty to sixty years, which have made life more complex and have lessened the social and economic security of the individual in spite of reforms and progress, probably have had an important causative part. To this should be added the gradual deterioration of foodstuffs and the use of certain "stimulants," especially tobacco in the form of cigarets. The monograph makes interesting and instructive reading. The changes that have taken place in the more homogeneous Danish population also have been evident in the mixed North American population. American medical authorities have long pointed out the great preponderance of gastric and duodenal ulcers in the male sex and even the preponderance of chronic duodenal ulcers in the opposite sex.

Man Against Himself. By Karl A. Menninger. Cloth. Price, $3.75. Pp. 485. New York: Harcourt, Brace & Company, 1938.

This is an interesting presentation which proposes to group all impulses toward self destruction and to endeavor to explain them by a single theory. The author makes no claim that the theory is proved; he brings forward a great many interesting and for the most part convincing examples in support of it. Briefly stated the theory is that, from the uterus to the grave, life is a struggle between the will to live and the wish to die and that various manifestations of human conduct represent different types and degrees of compromise between these conflicting drives or compulsions. The self destructive instinct is resolved by the author into three components, the aggressive (wish to kill), the punitive (conscience) and the submissive (wish to be killed). He takes up first suicide in the ordinary sense, that is, destruction of his life by the individual himself through swift, dramatic and often apparently sudden and impulsive acts. That these are never sudden or impulsive but the logical solution of deep-seated personality problems is part of the thesis of the book.

From suicide he proceeds to a consideration of "chronic suicide," under which he deals with asceticism, martyrdom, neu-

rotic invalidism, alcohol addiction, antisocial behavior and psychoses. He regards these as somewhat more successful though highly unsatisfactory solutions of personality conflicts. Next he considers focal suicide, under which he classifies self mutilations, malingering, addiction to surgery, purposive accidents, impotence and frigidity. Proceeding farther along the same line he analyzes organic suicide, in which he presents evidence, admittedly incomplete and fragmentary, in support of his conception that the psychologic factor in organic disease is far greater than is commonly recognized. In this connection the author presents a discussion of the totality concept in medicine and a brief consideration of the lesser evil as a more or less unsatisfactory compromise between the will to live and the wish to die. In diagrammatic form this is represented as the span from the uterus to the grave blocked by a black obstruction marked "external reality." In health this obstruction is completely avoided by a long elliptic detour labeled "normal excursion of life," composed largely of self-preservative impulses with a small component of self-destructive impulses. A shorter course skirting closer to the barrier but still avoiding it is labeled "neuroses" and is more heavily tinctured with self-destructive impulses. A still shorter curve colliding directly with "external reality" is labeled "psychoses" and has a heavy preponderance of self-destructive impulses. The shortest course of all, composed entirely of self-destructive impulses, is labeled "suicide" and represents almost a direct line from the uterus to the grave. An exactly similar diagram is presented in which the life curves are labeled respectively "health," "hysterical lesions," "structural lesions" and "fatal processes." The first diagram is representative of psychiatric categories, the second of medical categories.

The book is an intensely interesting and logical exposition of a theory. The theory is, of course, predicated on the acceptance of psychoanalysis, to which the author is so completely committed that he regards its rejection as an example of stupidity, stubbornness or neuroticism. The book is one that no doctor, in view of the increasing interest in psychosomatic medicine, can afford to ignore. It appears to be published for lay readers, but despite its interesting style and its wealth of illustrative cases from medical literature, newspapers and news magazines it will make difficult reading for one who has not previously gained a conception of the workings of the human mind and a reasonable familiarity with the theory of psychosis.

Sulphonamide Treatment of Experimental Tuberculosis in Guinea Pigs. By Konrad Birkhaug, M.Sc., M.D. A Lecture Delivered at the Chr. Michelsen Institute's Annual Meeting, March 14, 1939. Paper. Pp. 59, with 7 illustrations. Bergen: A. S. John Griegs Boktrykkeri, 1939.

No medical institute worthy of the name exists which has not been intrigued by the possibilities of research with the drug sulfanilamide or its derivatives. In fact, not since the epoch-making discovery of Ehrlich has a new chemotherapeutic agent received such universal scientific recognition as sulfanilamide. Dr. Konrad Birkhaug in his lecture delivered at the annual meeting of the Christian Michelsen Institute, Bergen (March 14, 1939), reviews much of the work which has already been covered in the enormous medical archives of the past three years. In his lecture he reviews the chemistry of the various compounds. He states: "Happily, this cumbersome chemical name has been abbreviated by the Council on Pharmacy and Chemistry of the American Medical Association to sulfanilamide." In his lecture he pays particular attention to the work on sulfanilamide as outlined by Marshall, Emerson and Cutting and discusses thoroughly the dosage and chemotherapeutic range of the product. He also reviews rather extensively the treatment of experimental tuberculosis with sulfanilamide and concludes that prolonged sulfanilamide treatment in vivo failed to exert any attenuating action on the virulence, tuberculinogenesis, growth, cultural or tinctorial characteristics of the tubercle bacillus. He also reports that in the case of prontosil soluble there was some inhibitory action probably due to bacteriostatic effect which renders the virulent tubercle bacillus temporarily impotent but that the huge dose of prontosil soluble required to bring about this indirect effect makes it obvious that this form of sulfanilamide therapy falls short of representing the ultimate goal in the chemotherapy of clinical tuberculosis.

Relation of Trauma to New Growths: Medico-Legal Aspects. By R. J. Behan, M.D., Dr. Med., F.A.C.S., Surgeon, St. Joseph's Hospital and Dispensary, Pittsburgh. Cloth. Price, $5. Pp. 425. Baltimore: Williams & Wilkins Company, 1939.

The author has accomplished a comprehensive review of a subject which is greatly in need of clarification. His approach to the problem is orderly. Following introductory references to historical aspects of the relation of trauma to cancer, the first chapters cover general phases of the subject, notable among which are those in reference to a classification of trauma and to the single trauma and aggravation controversies. This division of the book is concluded by an excellent presentation of the postulates which must be given consideration in determining the causative relationships between a malignant growth and previous injury. The remainder of the volume represents individual reviews of cancer in relation to occupation, medicolegal proof that trauma is the etiologic factor in a particular instance, and malignant disease following trauma involving various anatomic structures and systems, all of which are well developed. The work as a whole constitutes an excellent source of reference for the expert medical witness. Because of the extension of interest in the field of industrial disease and the relation of trauma to various pathologic states, this book should prove timely.

Handbuch der Viruskrankheiten mit besonderer Berücksichtigung ihrer experimentellen Erforschung. Unter Mitarbeit von K. Beller et al. Herausgegeben von Prof. Dr. E. Gildemeister, Vizepräsident des Instituts Robert Koch, Berlin, Prof. Dr. E. Haagen, Abteilungsleiter am Institut Robert Koch, und Prof. Dr. O. Waldmann, Direktor der Staatl. Forschungsanstalten, Insel Riems bei Greifswald. In zwei Bänden. Band II. Paper. Price, 44 marks. Pp. 768, with 105 illustrations. Jena: Gustav Fischer, 1939.

This book was written by the authors with the collaboration of thirty other investigators. The chapters are divided under seven headings: virus diseases with specific localization, virus diseases of cold blooded animals, virus diseases of insects, virus diseases of plants, viruses and tumors, diseases with virus-like agents and diseases of questionable virus etiology. Many chapters are concerned with animal diseases caused by viruses. The virus diseases with specific localizations are subdivided into three groups: (*a*) diseases of the respiratory tract, comprising nine chapters, one devoted to psittacosis, one to influenza, one to the common cold and the others to animal diseases, (*b*) diseases of the nervous system, comprising thirteen chapters treating such diseases as poliomyelitis, encephalitis and rabies, (*c*) diseases of other organs, treated in six chapters and including such diseases as venereal lymphogranuloma, molluscum contagiosum, and epidemic parotitis. Under the heading of diseases with virus-like agents are eight chapters in which such diseases as typhus fever and trachoma are discussed. A chapter on bacteriophage is also included under this heading. The second volume, like the first, is beautifully illustrated and the chapters are each followed by excellent bibliographies. This volume can be heartily recommended to research workers interested in virus diseases and also as a reference work to the physician interested in these diseases.

The Complete Guide to Bust Culture. By A. F. Niemoeller, A.B., M.A., B.S. With a foreword by Edward Podolsky, M.D. Cloth. Price, $3.50. Pp. 160, with illustrations. New York: Harvest House, 1939.

The reader who chooses this book because of its title is likely to be disappointed. Starting with the first chapter, which serves as the introduction to the subject, and continuing for 160 pages to the twenty-fourth chapter, which discusses diseases of the breast, one hopes in vain for some effective method that will develop the bust and will not be just a makeshift or an appliance that gives the illusion of a well developed bust. The chapters on physiology and anatomy are well written in simple language and give excellent information to the reader. In the chapters on exercise the author warns the reader at the beginning not to expect exercises to "do the impossible." He states that exercise will "do what it can as surely and dependably as any method in existence." The exercises he advocates are simple exercises that aim to bring about a better posture and are well known to most persons. The influence that diet has on the bust is told in the first paragraph of the chapter and the patient is warned that the breasts react the same as does any other part of the body in that it is not possible to feed a particular portion and ignore the rest. He warns against freak diets, sudden loss of weight in the obese and the too rapid gain of weight for the

very thin woman. The author neatly sums up the effects of creams and lotions on the bust by saying that the claim that such products can either "enlarge or reduce the breasts is utterly ridiculous." Of most value to the reader will be the chapters on brassières. The author discusses adequately the function of a brassière and describes the type that can be employed for the various types of busts. The final two chapters should have been omitted, as advice about actual treatment for various disease conditions of the breast is outlined. The warning that the physician needs to be consulted occurs only when potent drugs may be found to be necessary. Such advice as "liquids are restricted" and "cathartics administered," as well as "cautious massage" and "the breast pump should be employed," should not be left to the discretion of the patient. The discriminating reader will find some good information in this volume but must discount some parts as not being useful information for her.

Health and Unemployment: Some Studies of Their Relationships. By Leonard C. Marsh, Director of Social Research, McGill University, Montreal. In collaboration with A. Grant Fleming, Professor of Public Health and Preventive Medicine, McGill University, Montreal, and C. F. Blackler. Published for McGill University. Cloth. Price, $3. Pp. 243, with 36 illustrations. New York: Oxford University Press, 1938.

The relationship of health to unemployment has been developed in the United States to a political issue. The authors realize, as they point out in their preface, that one question which must be considered side by side with the provision of medical care is that of nutrition. They say that, even if the network of medical nursing and hospital services is radically widened from its present coverage through health insurance, the doctor is still limited in his work by the physique and environment of his patients. The authors are convinced apparently that a national system of health insurance is fundamental to every other type of medical problem, and they have apparently accepted the statements by Falk as the basis for their conclusions.

Man Against Microbe. By Joseph W. Bigger, Sc.D., M.D., F.R.C.P.I., Professor of Bacteriology and Preventive Medicine, Trinity College, University of Dublin. Cloth. Price, $2.50. Pp. 304, with 17 illustrations. New York: Macmillan Company, 1939.

There are good microbes and bad ones. The bad ones are those which bring about disease in human beings and animals. The good ones are those which participate in agriculture and industry. In this simple and well written book the author first discusses the nature of bacteria, next bacteria as a cause of disease, and finally control of food supplies, clean air and other sanitary problems. His book includes also brief sketches of the great contributors to bacteriologic science. It is a useful book, particularly for boys and girls of college age who have a special interest in this subject.

Health Officers' Manual: General Information Regarding the Administrative and Technical Problems of the Health Officer. By J. C. Geiger, M.D., Dr. P.H., Sc.D., Director, Department of Public Health, City and County of San Francisco, California. Cloth. Price, $1.50. Pp. 148, with 12 illustrations. Philadelphia & London: W. B. Saunders Company, 1939.

From his wide experience in public health, Dr. Geiger has prepared the manual dealing briefly with general principles of public health and organization. All details of controversial subjects are omitted. Dr. Geiger's knowledge and organizing ability show clearly in the type of book which he has prepared.

The introductory material concerning organization should be a helpful guide to the health officer in the establishment of basic services. Under records and statistics are included birth and death registration, collection of material for statistical study, graphic presentation and the explanation of procedures generally used in morbidity and mortality records. Under medical services are included programs on child hygiene, public health nursing, dental hygiene, mental hygiene and nutrition. The communicable diseases are classified according to control measures applied. It is advocated that medical services rendered by the health department include an emergency service, hospitalization facilities and homes for children, the aged and incapacitated persons. The inspection and control services consider procedures in food inspection and control, housing inspection, industrial hygiene, camp sites and laboratories. The manual is well written, is easily read and should serve as a useful guide to health officers in the administration of a balanced public health program. While primarily intended for those actively engaged in public health activities, this manual could be read with interest by the average lay person and would give him, in not too complicated form, a sufficiently comprehensive idea of modern trends in public health.

The Physiology of Exercise: A Textbook for Students of Physical Education. By James Huff McCurdy, A.M., M.D., M.P.E., Research Worker (Herbert L. Pratt Research Fellowship), 1935—, and Leonard A. Larson, B.A., B.P.E., M.Ed., Professor of Health and Physical Education in Springfield College (Corporate Title, International Young Men's Christian Association College), Springfield, Massachusetts, 1933—. Third edition. Cloth. Price, $3.75. Pp. 349, with 3 illustrations. Philadelphia: Lea & Febiger, 1939.

The first edition of this book was published some years ago. The authors have made considerable revision and added a section on exercise for people over 40 and another on exercise for women. They have availed themselves of a large amount of research recently published and also of the personal advice of many of the leaders in the field of physiology of exercise. Each of the chapters is supplied with an adequate bibliography. The book is of the utmost importance as a guide to all of those who work in association with modern athletics.

Discovery of the Elements. By Mary Elvira Weeks, Associate Professor of Chemistry at the University of Kansas, Lawrence, Kansas. Fourth edition. Cloth. Price, $3.50. Pp. 470, with illustrations collected by F. B. Dains, Professor of Chemistry at the University of Kansas. Easton, Pa.: Journal of Chemical Education, 1939.

The history of chemistry has been told in many ways. Here in brief form is the history of the discovery of each of the elementary substances with profuse illustrations and with brief biographical sketches of many of the noted chemists who contributed to the advancement of chemical science. The book is completed with a chronologic table and contains also a good index.

Nursing Through the Years. By Corinne Johnson Kern. Cloth. Price, $2.50. Pp. 340. New York: E. P. Dutton & Co., Inc., 1939.

The author of this book has written two previous volumes, entitled "I Go Nursing" and "I Was a Probationer." She is apparently much impressed with her life as a nurse, and she fills her book of reminiscences with innumerable anecdotes from the time she began nursing in 1900 to the present period, when she lives in the mountains and even here finds opportunity for her skill and her work. She writes with some facility; her book should be interesting to the great public, which is just beginning to find out the trials and tribulations of all those who work in the medical field.

Nobel Prize Winners. Charts, Indexes, Sketches. Compiled by Flora Kaplan. Boards. Price, $1.53. Pp. 60, with 2 illustrations. Chicago, Illinois: The Author, 1939,

In 1938 there was printed in Sweden a book on "The Nobel Prizes and Their Founder Alfred Nobel," by Fritz Henrickssson (THE JOURNAL, Aug. 19, 1939, p. 711). Now there becomes available a pamphlet entitled "Nobel Prize Winners," compiled by Flora Kaplan and dedicated to Jane Addams. This includes also a brief sketch of Alfred Nobel, a copy of his will, a complete table of Nobel prize winners from 1901 to 1938 with reclassification by nationality and with brief biographic sketches of Nobel prize winners in each of the various categories. There are also special analyses of Nobel prize winners by nationality, sex, race and religion. Both these pamphlets are exceedingly useful sources of reference on this most interesting topic.

Treatment in General Practice: The Management of Some Major Medical Disorders. Volumes I and II. First American edition. Cloth. Price, $7.50 per set. Pp. 259, with 6 illustrations; 436, with 8 illustrations. Boston: Little, Brown & Company, 1939.

The articles contained in these books were written as a series published by the *British Medical Journal* with a view to bringing general practitioners up to date on medical treatment. The books were published in Great Britain during 1936 and republished in 1938. They are introduced to the American medical profession by Dr. Reginald Fitz. The articles are succinct and practical but, obviously, not wholly up to date, as indicated by the fact that sulfapyridine is not even mentioned in the discussion of the treatment of pneumonia. There are

also references to medicinal products which are chiefly British and which are hardly known by their British names in this country. For instance, in one place readers are told to purchase their rubber mattresses from the Dunlop Rubber Company in England and other material useful in allergy from another British company. Throughout, indeed, all of the references are to British agencies. Thus the book is not nearly as useful as it would have been if it had been revised for American readers with new American work in mind. Nevertheless any general practitioner will find here innumerable practical hints of value in the daily practice of medicine.

Benjamin Franklin Calls on the President. By John de Meyer. Cloth. Price, $1.25. Pp. 90. New York: Ives Washburn, Inc., 1939.

In this little satire the author has conceived that Benjamin Franklin rose from his grave on the 149th anniversary of his death and went to visit the President. It is the kind of humor that appeared in the book called "A Connecticut Yankee in King Arthur's Court." Benjamin Franklin comes in contact with the modern motor car, the shower bath, modern credit and debt, and the New Deal. It is interesting to find what the author thinks Benjamin Franklin would have said about spending oneself back into prosperity.

Hospital Dietetics as a Career. The Institute for Research, Research No. 41. Paper. Price, $1. No pagination, with 3 illustrations. Chicago, Illinois: Institute for Research, 1939.

This twenty-four page illustrated booklet is designed to present adequately the calling of hospital dietetics as a career. It is readable and complete. It should be helpful to every person interested in becoming a dietitian.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Medical Practice Acts: Revocation of License for Allegedly Prescribing Narcotics to Satisfy Addiction.—The Colorado state board of medical examiners revoked the appellant's license to practice medicine on the basis of a charge that he was guilty of grossly negligent or ignorant malpractice and of immoral, unprofessional or dishonorable conduct. The district court of the city and county of Denver affirmed the revocation order and the physician prosecuted a writ of error in the Supreme Court of Colorado.

In brief, the physician was charged with writing various prescriptions of morphine for several named persons purportedly for the treatment of specified diseases when in fact the morphine was prescribed to satisfy narcotic addiction. The evidence showed that the morphine was prescribed in the quantities and to the persons named in the charge but, said the Supreme Court, there was no evidence in the record that the persons named were not suffering from the particular diseases specified on the prescriptions. The medical practice act authorizes the board to revoke a license to practice medicine if the physician has been convicted of a felony or of a crime involving moral turpitude or is "guilty of grossly negligent or ignorant malpractice" or of "immoral, unprofessional or dishonorable conduct." A conviction in a United States court on a charge of selling morphine to a habitual user thereof for other than medicinal purposes, the court said, is a conviction of a crime involving moral turpitude and warrants revocation of the physician's license. *White* v. *Board of Medical Examiners*, 70 Colo. 50, 197 P. 564. The physician in the present case, however, had not been so convicted. The board apparently proceeded on the assumption that it was sufficient if it found from evidence before it that there was a violation of the federal narcotic laws by the physician and reasoned that if a conviction of such violation in a court of competent jurisdiction carries with it the inference of moral turpitude as a matter of law, a finding by the board of such a violation has a similar effect. Such an assumption, the court said, was erroneous. The board in a proceeding of this kind, until a conviction is shown, has no concern with the provisions of the Harrison Narcotic Act nor with the regulations promulgated thereunder. The board is not vested with jurisdiction to try alleged offenders for a violation of the act and may not make its own finding of such violation and predicate thereon either malpractice or immoral, unprofessional or dishonorable conduct. Acts that are inhibited by the Harrison Narcotic Act may be considered by the board where there has been no conviction, but such acts must be proved by competent evidence to constitute malpractice or immoral, unprofessional or dishonorable conduct, without regard to the violation of any law that inhibits them.

Treatment that is proper by correct medical standards does not constitute malpractice even though some law is violated. Malpractice consists of a failure to exercise that degree of care and skill in diagnosis or treatment which may reasonably be expected from one licensed and holding himself out as a physician, under the circumstances of the particular case. In the present case there was no expert testimony tending to prove a failure properly to diagnose or to treat the disease of the various persons with respect to whom malpractice was charged. It was not enough that the board may be composed of experts who applied their knowledge of diagnosis and treatment to the case. The medical practice act provides for a review by the district court in revocation proceedings and on such review the court may determine whether the board regularly pursued its authority or abused its discretion. Such determination can be made only on the evidence appearing in the record. Obviously the reviewing court cannot be left to speculate on what was in the minds of the individual board members.

Neither the regulations promulgated by the Commissioner of Narcotics, the Colorado narcotic act nor the Harrison Narcotic Act purport to limit the purpose for which or quantity of any drug that may be prescribed in good faith by a physician in treating a patient in the practice of his profession, and there was no evidence that the morphine prescribed by the physician in this case was not prescribed in good faith. The amounts prescribed and the frequency of prescriptions might be such that in and of itself it would indicate to one skilled in their proper use that a physician could not possess ordinary skill and in good faith so frequently prescribe such quantities. Such matters, however, being only within the knowledge of experts, must be shown by the testimony of experts appearing in the record. There was no such testimony in the present case.

It was charged that several of the prescriptions issued by the physician were not given in good faith but for the satisfaction of the patient's addiction, contrary to the federal narcotic laws. If that is true, the court said, there is a forum in which the guilt or innocence of the offender may be determined. If convicted in such forum, the physician's license may be revoked. But, until such conviction, the propriety of prescribing for such a purpose is to be determined not by the board asking and answering the question as to whether some statute or regulation issued pursuant thereto has been violated but by asking and answering the question as to whether, aside from any law or regulation, the diagnosis and treatment was such as a physician possessed of ordinary skill in the exercise of ordinary care in applying his skill with the object of promoting the patient's physical well being might make and prescribe.

The finding of the board was further to the effect that all the acts charged against the physician constituted not only malpractice but also immoral, unprofessional and dishonorable conduct. It appeared, the court observed, that the physician kept full records and had never failed or refused to make them available to officers entrusted with enforcing the narcotic laws. No member of the medical profession testified that the acts were outside the limits within which skilled and honorable men exercising ordinary care might operate in the practice of their profession. No recognized canons of ethics were shown by the evidence to have been violated, even if that were a matter for the board's consideration. In *Sapero* v. *State Board*, 90 Colo. 568, 11 P. (2d) 555, it was held that a mere violation of canons of ethics not amounting to a breach

of legal duty does not constitute a sufficient ground for the revocation of a license. Since in the present case all the acts relied on as constituting immoral, unprofessional or dishonorable conduct related to patients of the physician and to his manner of treatment, in the absence of evidence showing what a physician of reasonable and ordinary skill, applying it with ordinary care in the diagnosis and treatment of the patient involved, would have done, or should have done, the record furnished no factual standard for the board's conclusion and no standard for the court to determine whether the acts charged amounted to a breach of the legal duty which the physician owed to his patient and to society in the practice of his profession.

The judgment upholding the revocation order was therefore reversed and the trial court was directed to refer the matter back to the board of medical examiners for such further proceedings, if any, as it might deem advisable.—*McKay v. State Board of Medical Examiners (Colo.), 86 P. (2d) 232.*

Accident Insurance: Death Due to Hypersusceptibility to Novocaine Not Death by "Accidental Means."—Preparatory to the performance of a tonsillectomy on the insured, novocaine (procaine hydrochloride) was administered hypodermically, infiltrating the tissue about her tonsils. Before "the usual amount" had been injected, her pulse weakened, she became pale, her body began to show a bluish cast, her breath became irregular and she died within a few minutes. Death was attributed to the patient's "hypersusceptibility" or "hypersensitivity" to novocaine. The plaintiff, as the beneficiary under insurance policies on the life of the deceased, sued two insurance companies on the policies. Those policies provided certain benefits in case of death due to bodily injuries caused solely by external, violent and accidental means. From a judgment in favor of the plaintiff, the insurance companies appealed to the Supreme Court of Appeals of West Virginia.

The principal question involved was whether or not death resulted from "accidental means." The plaintiff contended that if the use of novocaine resulted in something unforeseen and unexpected, the death resulted through accidental means even though the novocaine was injected intentionally and with the consent of the insured. The court admitted that the means employed by the physician produced unusual and unexpected results but refused to hold that the means by which they were produced were accidental. The physician did exactly what he intended to do and the patient invited it and therefore consented. The court thought that it could not be said that under such circumstances the means employed were accidental, even though the result was not one which was contemplated or expected and was due to an unknown and rare hypersusceptibility. The "means" employed were intentional, not accidental. In the opinion of the court the death did not come within the provisions of the policies sued on.

The judgments in favor of the plaintiff were reversed and new trials ordered.—*Otey v. John Hancock Mut. Life Ins. Co.; Same v. Educators Beneficial Ass'n (W. Va.), 199 S. E. 596.*

Cosmetology: Services as "Professional Services"—Negligence as "Malpractice."—The defendant insurance company agreed to indemnify Herzberg's, Inc., a department store, against claims arising out of accidental bodily injuries occurring within the store. The policy, however, contained an endorsement which excepted the insurer from liability for—

> bodily injuries, illness, or death resulting therefrom, suffered . . . in consequence of an error or alleged error or mistake in administering, applying or dispensing drugs, chemicals, mixtures or the like; or in the making or compounding of prescriptions; *or in consequence of professional services or treatments or the omission thereof, or malpractice on the part of any physician, surgeon, nurse, druggist, assistant, attendant or any person connected with the Assured in the operation of the business covered by this policy.*

A customer underwent a procedure in one of the departments of the store designed to remove superfluous hair, which procedure was administered by a so-called cosmetician, using an electrical apparatus called a "Tricho" machine. The customer was injured and subsequently sued the store, recovering judgment. The insurer refused apparently to pay either the judgment or the cost of defending the suit, and the store sued it on the policy, recovering judgment in the district court of the United States for the district of Nebraska. The insurance company then appealed to the circuit court of appeals, eighth circuit.

The trial court, said the circuit court of appeals, apparently considered that the endorsement excepting the insurer from liability was confined to instances in which injury was "suffered in consequence of professional treatments administered by any physician, surgeon, nurse, druggist, or by any assistant, attendant or helper to any such physician, surgeon, nurse or druggist." Such a construction of the endorsement is too narrow. The endorsement provided, among other things, that the insurance company should not be liable for bodily injuries suffered by any person in consequence of *professional* services *or treatments or malpractice,* on the part *of any attendant, person or persons connected with the assured* in the operation of the business covered by the policy. The treatment of the customer's face for the removal of superfluous hair was a professional treatment administered in a department of the store by persons connected with the assured in the operation of its business. The department was held out to the public as qualified to administer treatments of the nature employed in beauty shops generally. The operator of the shop and her assistant were educated in schools devoted to instruction in the "art" of cosmetology.

It is significant in this connection that Nebraska has undertaken to regulate the practice of cosmetology by enacting a statute requiring certain educational and moral qualifications of persons licensed to practice cosmetology and authorizing the revocation of such licenses for the commission of malpractice and unprofessional conduct. The term "profession" in the past has been so generally associated with theology, medicine and law that the construction adopted by the trial court may be readily understood, but the term has long ceased to be restricted exclusively to those so-called learned professions. The term is defined in the New Century Dictionary, 1927, as follows:

> Formerly theology, law and medicine were specially known as the professions; but as the application of science and learning are extended to other departments of affairs, other vocations also receive the name.

In the Oxford English Dictionary, 1926-1932, a "profession" is defined as

> . . . the occupation which one professes to be skilled in and to follow [which involves a] vocation in which a professed knowledge of some department of learning or science is used in his application to the affairs of others, or in the practice of an art founded upon it.

The fact, continued the court, that physicians, surgeons, nurses and druggists are specifically mentioned in the endorsement does not limit its application to such professions and vocations. The obvious error involved in the professional application of the Tricho apparatus, whether due to negligence or ignorance, amounted to malpractice under the terms of this endorsement. Consequently, the insurance company is not liable under the policy.

The judgment below in favor of the department store was reversed.—*Ocean Accident & Guarantee Corporation, Inc., v. Herzberg's, Inc., 100 F. (2d) 171.*

Society Proceedings

COMING MEETINGS

American Academy of Pediatrics, Cincinnati, November 16-18. Dr. Clifford G. Grulee, 636 Church Street, Evanston, Ill., Secretary.

American Society of Anesthetists, Los Angeles, Dec. 14. Dr. Paul M. Wood, 745 Fifth Ave., New York, Secretary.

American Society of Tropical Medicine, Memphis, Tenn., Nov. 21-24. Dr. E. Harold Hinman, Wilson Dam, Ala., Secretary.

Radiological Society of North America, Atlanta, Ga., Dec. 11-15. Dr. Donald S. Childs, 607 Medical Arts Bldg., Syracuse, N. Y., Secretary.

Society for the Study of Asthma and Allied Conditions, Philadelphia, Dec. 9. Dr. W. C. Spain, 116 East 53d St., New York, Secretary.

Society of American Bacteriologists, New Haven, Conn., Dec. 28-30. Dr. I. L. Baldwin, Agricultural Hall, University of Wisconsin, Madison, Wis., Secretary.

Southern Medical Association, Memphis, Tenn., Nov. 21-24. Mr. C. P. Loranz, Empire Bldg., Birmingham, Ala., Secretary.

Southern Surgical Association, Augusta, Ga., Dec. 5-7. Dr. E. Alton Ochsner, 1430 Tulane Ave., New Orleans, Secretary.

Western Surgical Association, Los Angeles, Dec. 15-16. Dr. Albert H. Montgomery, 122 South Michigan Blvd., Chicago, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1929 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

Alabama State Medical Assn. Journal, Montgomery

9: 69-104 (Sept.) 1939

Reducing Pneumonia Death Rate. G. S. Bryan, Amory, Miss.—p. 69.
*New Technic for Blood Sedimentation Test. C. Brooks, New Orleans. —p. 72.
Sulfapyridine: Its Use in Pneumococcic Infections. H. Kennedy and J. S. Smith, Birmingham.—p. 73.
Acute Purulent Pericarditis: Report of Case. J. O. Finney and J. O. Morgan, Gadsden.—p. 81.

New Technic for Blood Sedimentation Test.—Brooks outlines a blood sedimentation test which he believes is not difficult or complex in its performance and therefore its use should not be restricted. The method consists of filling a pipet with blood directly from the vein and setting the tube immediately in the vertical position in a holder. The graduated limb of the pipet is filled with anticoagulant, all of which is blown out except the thin film adherent to the inside of the tube. The graduated limb is then filled by inserting the needle into a vein and permitting the blood to flow into the tube by its own pressure. As soon as the tube is filled just beyond the 100 mm. mark, the cock is closed, cutting off the lumen exactly at the 100 mm. mark; the column of blood held in the tube is thus exactly 100 mm. long. The needle is quickly removed and the tube is immediately put in the vertical position in a holder. The sedimentation is observed for an hour or longer and the results are recorded on a chart. The method is simple, automatic, direct and precise. Its employment should encourage a wider use of the blood sedimentation test.

American Journal of Public Health, New York

29: 983-1082 (Sept.) 1939

Developments in the New York State Tuberculosis Program. R. E. Plunkett, Albany, N. Y.—p. 983.
Occurrence, Pathologic Aspects and Treatment of Fluoride Waters. M. S. Nichols, Madison, Wis.—p. 991.
*Morbidity and Mortality from Scarlet Fever in the Negro. P. B. Cornely, Washington.—p. 999.
Control of Syphilis in a Southern Rural Area: Preliminary Report. L. E. Burney, Brunswick, Ga.—p. 1006.
Public Health Nursing Program of the Future. G. C. Ruhland, Washington, D. C.—p. 1015.
Morbidity and Mortality Statistics as Health Information. H. Williams, Baltimore.—p. 1019.
The School Nurse as a Health Educator. Gertrude E. Cromwell, Des Moines, Iowa.—p. 1022.
Industry's Challenge to the Nurse. LaVona Babb, St. Joseph, Mo.—p. 1025.
Newer Concepts and Procedures of Maternal Care. Maude M. Gerdes, Washington, D. C.—p. 1029.
Epidemiology of Syphilis in New York City. T. Rosenthal and J. Weinstein, New York.—p. 1034.

Scarlet Fever in Negroes.—Cornely discusses the supposed differences in the mortality and morbidity rate from scarlet fever in the white and Negro populations in the South, which has led to the belief that this disease is not common in the Negro and that therefore he is highly resistant to it. This resistance has been attributed to his resistant ectoderm and to a longer racial experience. These two explanations do not seem to hold true when the author's data are considered, which show that although there are great differences in the South there is little inequality in the northern cities in the mortality and morbidity rates from scarlet fever in the two races. If the Negro was highly resistant to this disease, even though his mortality and morbidity in the North and South might not be similar, the disparity between the two races would be just as great in the North as in the South. This the author states has not been shown in his data. Secondly, the idea of racial susceptibility must be discarded when the results of Dick test surveys of several investigators have shown that there is no significant difference between reactions of white and Negro children to this test. The recorded low mortality and morbidity from scarlet fever in Negroes in the South may be explained on (1) the occurrence of mild and subclinical cases which are not recognized and not reported and (2) most of all on the poor reporting of typical cases and deaths in the rural areas of the South, in which almost 70 per cent of the southern Negroes are to be found. That mild and atypical cases of scarlet fever must occur widely in the South draws support from the results of Dick test surveys made in certain tropical countries, which have shown the higher prevalence of negative Dick tests and the earlier appearance of this immunity in children in the tropics. No differences were found between Negroes and white persons. Mayer and Davison have similarly shown that, although in North Carolina the number of cases reported was less than half that in New York City, the rate of susceptibility was much lower than that found in various other comparable groups in the United States. Thus, it must be assumed that there is a wide prevalence of mild and atypical cases in the South.

American Review of Tuberculosis, New York

40: 243-362 (Sept.) 1939

Extrapleural Pneumonolysis with Paraffin Filling: Late Results. R. B. McIndoe, Howell, Mich.; J. D. Steele Jr., Milwaukee, and J. Alexander, Ann Arbor, Mich.—p. 243.
*Collapse Therapy of Tuberculosis: Seen from the Point of View of Control of Disease in Community. A. J. Hruby, Chicago.—p. 255.
Management of Pleural Effusions Complicating Artificial Pneumothorax. T. De Cecio and B. P. Potter, Jersey City, N. J.—p. 272.
Transmediastinal Hernia: Mediastinal Movements During Respiration in Bilateral Pneumothorax. M. Finkelstein, Denver.—p. 281.
Precursors of Forlanini and Murphy. L. R. Davidson, Staten Island, N. Y.; M. Fuhrman and V. J. Rella, New York.—p. 292.
Tuberculin Survey of School Children: Method of Case Finding of Adult Type Pulmonary Tuberculosis. E. S. James, Vancouver, B. C. —p. 306.
Growth and Metabolism of Tubercle Bacilli: Role of Source and Proportion of Nitrogen in Medium. R. R. Henley and P. W. LeDuc, Washington, D. C.—p. 313.
Intracutaneous Tuberculosis in Rabbits: Effect of Previous Injury on Lesions of Primary and Secondary Type. W. H. Feldman and F. C. Mann, Rochester, Minn.—p. 336.
Error in Counting Bacilli in Sputum. W. N. Berg, New York.—p. 351.

Collapse Therapy of Tuberculosis.—Hruby reviews the history of the institution of collapse therapy for tuberculosis and its value in the control of the disease in a community, in particular Chicago. Over the six and a half years since the procedure has been carried out in the Municipal Tuberculosis Sanitarium he states that the results in 7,341 cases have been twice as good in the cases so treated as in the controls. Undue attention must not be paid to the mortality tables as an index to the value of collapse. To be fully effective, collapse as a measure of community control of tuberculosis should have widespread and efficient application. Wherever possible the unified plan should prevail, intramural collapse, extramural collapse, reciprocity of function, interchange of patients as between the sanatorium and the field. For the fullest measure of community control this combination is necessary. The field clinic, expansile, inexpensive, elastic in its applicability to the need, should take up the treatment immediately after the patient is dismissed from the sanatorium. The much discussed question of the initial treatment outside the Municipal Tuberculosis Sanitarium does not seem to make a great difference, 70.6 per cent of the patients who received their initial treatment in the clinic are living as against 78.1 per cent for the patients who received their first injection in the Municipal Tuberculosis Sanitarium. The figures embracing 3,090 treated cases explode the belief still current in some quarters that the induction of collapse is purely an institutional prerogative. Owing to its possibilities in the direction of community control, collapse in the Negro deserves more energetic consideration. At present the results for Negroes, while not as good as those for white persons, are considered satisfactory. A gap in the mortality of six to one is reduced to a gap of three to two. The officers and medical personnel of the Municipal Tuberculosis Sanitarium engaged in the study are convinced that collapse, in its dual capacity as public health instrument and medium of cure, symbolizes a union of ends and aims, offering the patient his best chance and the community its best protection.

Archives of Surgery, Chicago

39: 513-690 (Oct.) 1939

Primary Carcinoma of Male Urethra. H. A. R. Kreutzmann and B. Colloff, San Francisco.—p. 513.
Pancreaticogastrostomy: Experimental Transplantation of Pancreas into Stomach. E. C. Person Jr. and F. Glenn, New York.—p. 530.
*Traumatic Subcutaneous Rupture of Normal Spleen. L. T. Wright and A. Prigot, New York.—p. 551.
Correlation of Pathologic and Clinical Observations in Chronic Lymphoid Appendicitis. C. B. Fausset, New York.—p. 577.
Capillary Permeability and Inflammation in Narcotized Rabbits. R. D. Cressman and R. H. Rigdon, Nashville, Tenn.—p. 586.
*Joint Cartilage Under Infraphysiologic, Ultraphysiologic and Euphysiologic Demands. E. Freund, Los Angeles.—p. 596.
Thyroid Gland: Clinical Pathologic Study, with Special Reference to True Tumor: Analysis of 216 Cases. E. J. Delli Bovi, New York.—p. 624.
Aseptic Necrosis of Femoral Head Following Traumatic Dislocation: Report of Two Cases. S. Kleinberg, New York.—p. 637.
Tumors of Small Intestine. S. Cohn, J. A. Landy and M. Richter, New York.—p. 647.
Partial Agenesis of Corpus Callosum: Diagnosis by Ventriculographic Examination. A. B. Cass and D. L. Reeves, Los Angeles.—p. 667.
Removal of Procaine from Cerebrospinal Fluid During Anesthesia. H. Koster, A. Shapiro, R. Warshaw and M. Margolick, Brooklyn.—p. 682.
Warm Moist Air Therapy for Burns. S. Smith, R. Risk and C. Beck, Chicago.—p. 686.

Traumatic Subcutaneous Rupture of Normal Spleen.—Wright and Prigot report the thirty cases of subcutaneous rupture of the normal spleen due to trauma observed at the Harlem Hospital from Jan. 1 to Sept. 1, 1938. Operation or necropsy proved that the spleen was the injured organ in these cases and histologic section showed normal splenic tissue. Nine of the patients were from 5 to 10 years of age. Of these, eight were injured in automobile accidents and the ninth by a fall against the curbstone. In the age group from 11 to 20 years there were five patients, of whom only two were struck by automobiles, one was injured while riding in an automobile, one was struck by a bicycle and one was injured while coasting. Alcohol played a prominent part in the injuries of seven patients from 21 to 30 years of age. Three were hurt by falling while drunk, one was involved in an automobile accident while inebriated, two were injured by automobiles and one either fell or jumped from a fourth story window. Two of six patients between 31 and 40 years of age were victims of assault and battery, three were involved in automobile accidents and one fell and injured himself while under the influence of liquor. There were three patients from 43 to 61 years of age and two of these were injured by automobiles and the cause of injury to the third was undetermined. Seven of the thirty patients were women. The diagnosis of subcutaneous rupture of the normal spleen is not easy. There are no signs or symptoms pathognomonic of this condition; therefore each case must be considered on its own merit. The symptoms and signs of rupture of the spleen are chiefly those of local injury and hemorrhage, shock and peritoneal and diaphragmatic irritation. Abdominal pain is the most common complaint. This pain is usually sharp and lancinating and is localized in the left upper quadrant. However, it may be described as generalized abdominal soreness and is sometimes more acute in the other quadrants. All the patients either entered with this symptom or had it while under observation. The symptom next in order of frequency is dyspnea. Eight of the patients complained of being "short winded" or had some form of respiratory distress. Vomiting occurred in three and diarrhea in two. In all cases there were abdominal tenderness and spasm. The trauma which produces the splenic injury may cause contusion of the abdominal wall. In no case were there any external marks on either the abdomen or the back. The erythrocyte count and the value for hemoglobin may be normal, but in all except one case in the series the latter was low, ranging from 40 to 80 per cent. The erythrocyte count ranged from 2,400,000 to 4,400,000 per cubic millimeter. The leukocyte count ranged from 6,000 to 23,850 per cubic millimeter and not infrequently failed to rise with increasing temperatures. The abdominal tap has proved to be of invaluable aid in the diagnosis of subcutaneous injury of the abdominal viscera. If the result is negative but the patient continues to show signs of concealed hemorrhage, it should be repeated. The differential diagnosis must exclude lesions above the diaphragm and retroperitoneal as well as intra-abdominal conditions. The diagnosis is most frequently missed because a history of trauma is not obtained or, if one is obtained, it is disregarded. Associated lesions may mask the signs and symptoms associated with a ruptured spleen. The treatment of rupture of the spleen is surgical, that is splenectomy. Preoperative enemas are forbidden. The mortality (thirteen of the thirty patients died, a gross mortality of 43.3 per cent, and seven died without operation, giving an operative mortality of 27.3 per cent) for subcutaneous rupture of the normal spleen is discussed. This mortality the authors believe can be lowered by (1) constant alertness on the part of the surgeon and the staff to avoid errors in diagnosis, (2) more rapid diagnosis so that the patient will receive the benefits of operation sooner, (3) use of a slow blood drip preoperatively with or without intravenous administration of fluids (when blood from a "bank" is not readily available, infusions of a saline solution should be given) and (4) adequate fluids should be given to restore water balance.

Effect of Overactivity and Disuse on Joint Cartilage.—Freund discusses the behavior of cartilage under ultraphysiologic conditions (increased pressure) and infraphysiologic conditions (disuse). He finds that functional stimuli below or above the physiologic optimum, if active over a long period, are deleterious to joint cartilage. The damage does not remain limited to the joint cartilage in growing persons but draws the bony epiphysis into participation by stopping further endochondral ossification. The time factor is of greatest importance in the development of pathologic changes in the joint cartilages. The pressure force may stay within normal limits; nevertheless, it will damage the joint cartilage if it is continuously active over a long period. The same is true of disuse. Too little or too much use of joint cartilage over a long period is detrimental. This is confirmed by almost every day's operative and necropsy material and does not need proof by animal experimentation. With genu valgum or genu varum, for instance, typically hypertrophic arthritic changes develop in older age. Marginal exostoses and degeneration and fibrillation of joint cartilage will be present at the condyles with increased weight bearing, while atrophy and retraction of joint cartilage are noticed in the condyles with less weight bearing. Whether the pressure force is intense and working over a relatively short period or whether it is within physiologic limits but of protracted or continuous action, the result will be the same: the joint cartilage will lose its normal elasticity and will suffer irreparable damage. With the loss of elasticity, the ways are opened for the different processes of cartilage degeneration, even for reactive resorption from below by bone marrow—all changes preceding and accompanying hypertrophic arthritis. Any definite alteration of function for a long period (infraphysiologic and ultraphysiologic demands) is certain to lead to degenerative changes of joint cartilage and may be followed by the whole syndrome of fully developed arthritis deformans, the more probably the longer the joint is exposed to unphysiologic use.

California and Western Medicine, San Francisco

51: 145-216 (Sept.) 1939

Some Indications for Roentgen Ray Treatment. U. V. Portmann, Cleveland.—p. 151.
Water Absorption from Colon and Its Relation to Motility. K. M. Bonoff, Los Angeles.—p. 154.
Pharyngo-Esophageal Diverticula: Modified Technic for One-Stage Operation. J. H. Shephard, San Jose.—p. 156.
*Gonadotropic Hormone of Pregnant Mares' Serum: Its Clinical Use in Gynecology. G. J. Hall, Sacramento.—p. 159.
Sulfanilamide and Sulfapyridine in Treatment of Various Infections: Factors Influencing Prognosis in Pneumonia. C. S. Keefer, Boston.—p. 163.
Urinary Tract Infections in the Newborn. W. M. Happ, Beverly Hills, Calif.—p. 166.

Gonadotropic Substance in Gynecology.—Hall used equine gonadotropic substance in 135 cases of various gynecologic disorders. Of the patients with menstrual disturbances 57.6 per cent were cured, 47 per cent of those with genital hypoplasia were cured and twenty-four of the forty-three (55.8 per cent) who were treated for sterility became pregnant. A number of the patients necessarily fall into more than one group. For example, a patient whose primary complaint was sterility may also have had associated dysmenorrhea or hypomenorrhea, and one who complained of the subjective symptoms of estrogenic deficiency might also have had genital hypoplasia, dysmenorrhea or oligomenorrhea.

Endocrinology, Los Angeles

25: 337-490 (Sept.) 1939

Assay of Progesterone by Production of Artificial Pregnancy-Response of Feline Uterus. H. B. Van Dyke, New Brunswick, N. J., and J. S. Chen, Peking, China.—p. 337.

*Effect of Prolactin on Mammary Gland Secretion. H. L. Stewart Jr. and J. P. Pratt, Detroit.—p. 347.

*Observations on Adrenalin Level in Blood Serum During Insulin Hypoglycemia and After Metrazol Convulsions. Gert Heilbrunn and E. Liebert, Elgin, Ill.—p. 354.

Estrogen-Progesterone Induction of Mating Responses in Spayed Female Rat. J. L. Boling and R. J. Blandau, Providence, R. I.—p. 359.

Induction of Mating and Ovulation in Cat with Pregnancy Urine and Serum Extracts. W. F. Windle, Chicago.—p. 365.

Technic for Hypophysectomy of Pigeons. J. P. Schooley, Cold Spring Harbor, N. Y.—p. 372.

Influence of Prolonged Etherization, Trauma and Hemorrhage on Survival Period of Adrenalectomized Rats. R. S. Weiser and Helen Knott, Seattle.—p. 379.

Studies on Respiration of the Newt: II. Effect of Temperature in Hypophysectomized, Immature, Thyroidectomized and Pancreatectomized Males. C. M. Pomerat, Cambridge and Worcester, Mass.—p. 385.

Studies on Inhibitory Hormone of Testes: II. Preparation and Weight Changes in Sex Organs of Adult Male White Rat. B. Vidgoff, R. Hill, H. Vehrs and Rosa Kubin, Portland, Ore.—p. 391.

Effect of Castration on Body Weight and Length of Male Albino Rat. H. S. Rubinstein, A. R. Abarbanel and A. A. Kurland, Baltimore.—p. 397.

Study of Muscular Efficiency in Rats Injected with Anterior Pituitary Growth Factor. E. B. Plattener and C. I. Reed, Chicago.—p. 401.

Effect of Prolactin on Mammary Secretion.—The nursing history and breast secretion of 380 consecutive nursing mothers were recorded by Stewart and Pratt for the first ten postpartum days. Of the 380 mothers, 333 nursed their babies; 207 were full-breast nursing, seventy were part-time nursing and fifty-six deficient nursing. Of the fifty-six deficient lactating mothers only twenty-four expressed their desire to nurse the baby for at least six weeks, to receive injections of prolactin in an attempt to improve the milk supply and to pump the breasts every four hours for a minimum of five days (from the fifth to the ninth postpartum day). Ampules of identical appearance containing 5 cc. of solution to be injected daily were differentiated by the labels 68A and 60A. The contents of these ampules remained unknown until the study was concluded. After the results were tabulated, it was learned that ampules 68A contained 1,000 pigeon units (Riddle) of lactogenic hormone. Ampules 60A contained no hormone. In addition to the deficiency cases, ten part-time nursing mothers were studied. The average daily milk secretion of 184 cc. on the fifth postpartum day of fourteen deficient mothers receiving prolactin increased to 212 cc. the following day. There was a decrease in seven of the fourteen cases on the seventh day, the average output falling to 205 cc. From the seventh to the ninth day there was a progressive increase to 258 cc. The average total gain during the entire period was 74 cc. In relation to the amount secreted on the fifth day, this represents a gain of 40 per cent. In three women the milk production was less on the ninth than on the fifth day. None of this group were discharged with full-breast nursing. Ten mothers receiving the control solution showed a gradual rise from an average breast secretion of 219 cc. on the fifth day to 311 cc. on the ninth day. The total average gain during this period was 92 cc., or 42 per cent. In two the amount of milk produced on the ninth was less than on the fifth day. No mother in this group was discharged with full-breast nursing. The average gain of primipara and multipara was 88 cc. (42 per cent) and 81 cc. (44 per cent) respectively. In the ten women in whom the breasts were pumped every four hours and the baby did not nurse, the average gain was 71 cc., or 43 per cent. In fourteen the breasts were pumped immediately after the baby nursed; in these the average gain in milk secretion was 89 cc., or 39 per cent. The average secretion on the fifth day of fourteen mothers less than 30 years of age was 215 cc. It increased to 325 cc. on the ninth day. In ten mothers more than 30 years of age the average output on the fifth day was 176 cc. On the ninth day it was 227 cc. All twenty-four deficiency cases were seen at the end of six weeks. Ten mothers in the prolactin and control groups had dried up the breasts because of insufficient milk supply. Those who had received prolactin showed no significant increase of milk secretion over the control group. Part-time nursing mothers whose milk production on the fifth day was more than 300 cc. produced a greater average increase of milk secretion than the deficiency group. This series averaged 341 cc. on the fifth day and showed a progressive daily rise to 450 cc. on the ninth day. The total average increase of 109 cc. was greater than either the control or prolactin cases in the deficiency group. The percentage increase, however, was less (31 per cent). Multiparas showed a greater increase than primiparas. The two mothers in this group discharged with full-breast nursing were multiparas.

Blood Epinephrine After Insulin Hypoglycemia and Metrazol.—Heilbrunn and Liebert determined the activity of epinephrine and epinephrine-like substances in the blood serum in patients during various hypoglycemic states. The curves of those patients evidencing shock showed an inadequate adrenal response to insulin ninety minutes after the injection, while the nonshock curves displayed a marked rise in the epinephrine level of the blood at this time. The epinephrine output of a third group was dependent on the muscular movements; this was confirmed by observations on the epinephrine level of the blood serum after metrazol convulsions. The epinephrine level reflected directly the various stages of insulin hypoglycemia. At the time of deep coma the epinephrine level was low, while it rose to a high level at the time of recovery.

Iowa State Medical Society Journal, Des Moines

29: 427-478 (Sept.) 1939

Ocular Disorders Due to Exogenous Toxemia. W. L. Benedict, Rochester, Minn.—p. 427.

Diagnosis and Management of Carcinoma of Breast. N. F. Hicken, Salt Lake City.—p. 430.

Respiratory Allergy: Survey of 283 Consecutive Cases Seen in Office Practice from July 1937 to December 1938. L. J. Halpin, Cedar Rapids.—p. 439.

Perennial Type of Nasal Allergy. J. E. Reeder, Sioux City.—p. 446.

Status of Ophthalmologists and Otolaryngologists in a State Medical System. S. B. Chase, Fort Dodge.—p. 448.

Uses of Benzedrine Sulfate in General Practice. R. L. Gorrell, Clarion.—p. 451.

Recurrence of Undulant Fever Following Sulfonamide Therapy. M. C. Schroeder, Monroe.—p. 453.

Journal of Lab. and Clinical Medicine, St. Louis

24: 1227-1338 (Sept.) 1939. Partial Index

*Influence of Vitamin D on Serum Phosphatase Activity in Arthritis. P. W. Smith, A. D. Klein and I. E. Steck, Chicago.—p. 1227.

Neural Depressing Effect of Trichlorethylene. H. S. Rubinstein, E. Painter and O. G. Harne, Baltimore.—p. 1238.

Mechanism of Gold Therapy in Rheumatoid Arthritis. D. H. Kling, Los Angeles; D. Sashin and J. Spanbock, New York.—p. 1241.

Antigenic Properties of Streptococci Killed by Ultraviolet Light. M. Murray, Cincinnati.—p. 1245.

*Basal Metabolic Rate of Normal Individuals in New Orleans. A. G. Eaton, New Orleans.—p. 1255.

Hemolysis Produced by Staphylococcus Colonies and Toxin on Agar Mediums Containing Various Animal Bloods. R. H. Rigdon, Nashville, Tenn.—p. 1264.

*Estrogenic and Chorionic Gonadotropic Hormone in Normal Pregnancy and in Toxemia of Pregnancy. S. L. Siegler, Brooklyn.—p. 1277.

Sulfapyridine in Blood of Guinea Pigs After Oral Administration. A. R. Armstrong and D. R. Muirhead, Hamilton, Ont.—p. 1281.

Determination of Vitamin C in Urine. H. N. Holmes and Kathryn Campbell, Oberlin, Ohio.—p. 1293.

Vitamin D and Serum Phosphatase in Arthritis.—Smith and his co-workers determined the serum phosphatase activity after prolonged medication with vitamin D in cases of atrophic and hypertrophic arthritis and concluded from their study that serum phosphatase activity does not promise to be of value as a diagnostic aid in arthritis as there is a wide distribution of values above, below and within the normal range. The possibility of its value as an aid in differentiating between the atrophic and hypertrophic types is again negated by the wide distribution, regardless of the somewhat higher average that was obtained in a limited number of hypertrophic cases. Also there is a possibility that the shift in the serum phosphatase activity, observed to occur in patients who have ultimately benefited from vitamin D, might prove to constitute a basis for prediction as to the suitability of such therapy. Further investigation is needed.

Metabolism of Normal Individuals in New Orleans.—As a practical result of comparing the four commonly used standards for determining the metabolic rates in ninety-eight women and sixty-two men (apparently normal students and staff of the Louisiana State University) Eaton arrived at a set of corrections which may be applied to existing standards in predicting the basal heat production of individuals in New Orleans and, it is hoped, in other parts of the deep South. He proposes to employ a correction factor of — 10 per cent to all

values of the Aub and Du Bois standards or —11 per cent for men and —7 per cent for women to the recent Mayo Foundation standards. These corrections are shown to be valid statistically. The cause of the lowered basal metabolic rate in warm climates has been discussed by many investigators. It is a fact that metabolism is somewhat proportional to the average annual temperature, although the relationship cannot as yet be expressed as a linear function. Lessened desire for strenuous physical exertion and greater ability and desire for relaxation must be considered as probable factors in lowering the metabolic rate. Whatever the cause may be, the lowered basal heat production lessens the strain on the heat-eliminating mechanism and makes life more comfortable in a subtropical climate, especially during hot humid nights, when heat is so difficult to dissipate. The mechanism by which this adaptation is brought about is as yet obscure.

Hormones in Pregnancy.—Siegler presents the quantitative determination of the total estrogenic and chorionic gonadotropic hormones in five normal pregnancies and in one case of toxemia of pregnancy, which toxemia was alleviated by the administration of large doses of estradiol benzoate. An average gradual increase in the total estrogenic hormone eliminated was observed in the five normal cases of pregnancy, from 3,500 rat units per liter of urine on the thirtieth day following the first missed menstrual period, reaching a peak at term of 82,000 rat units, after which there was an abrupt decline of the concentration of the total estrogenic hormone to 2,200 rat units on the first postpartum day to 200 rat units on the fourth postpartum day. The lowest amount excreted on the thirtieth day was 1,800 and the highest 4,800 rat units. The lowest concentration at term was 70,000 and the highest 100,000 rat units. Conversely, in the determination of the chorionic gonadotropic hormone there was a sudden increase from 7,500 mouse units per liter on the fourteenth day after the first missed menstrual period to its peak of 140,000 mouse units on about the thirtieth day. Thereafter there was an abrupt decline, with a level below 10,000 mouse units after the sixtieth day to an average of about 4,500 mouse units to the termination of pregnancy, becoming negative on the fourth postpartum day. The lowest concentration in the first two weeks following the first missed menstrual period was 4,500 and the highest was 15,000 mouse units. The lowest amount at the peak was 96,000 and the highest was 210,000 mouse units. In the several instances in which the serum had been used in the assaying of the total estrogenic and gonadotropic hormones, the amounts estimated coincided with those found in the urine. The hormone determination in the case of toxemia of pregnancy showed a rise in the amount of gonadotropic hormone in the fifth and sixth months. An increase in blood pressure, the presence of albuminuria and edema in the following month with a higher level of gonadotropic hormone concentration, and a subnormal amount of total estrogenic hormone followed. These higher levels persisted with the severe toxemic symptoms until estradiol benzoate was given. Following this the level of gonadotropic hormone fell to almost normal, the level of the total estrogenic hormone rose in amount and the toxemic symptoms subsided.

Kansas Medical Society Journal, Topeka

40: 361-404 (Sept.) 1939

Treatment of Gastric and Duodenal Ulcer. W. Walters, Rochester, Minn.—p. 361.
The Approach Years. W. S. Horn, Fort Worth, Texas.—p. 368.
Treatment of Paroxysmal Tachycardia with Apomorphine. G. E. Finkle, McPherson.—p. 372.
Treatment of Intractable Pain. D. F. Coburn, Kansas City.—p. 373.
Sinus Trouble and Its Nonoperative Treatment. W. B. Granger, Emporia.—p. 375.

Nebraska State Medical Journal, Lincoln

24: 321-360 (Sept.) 1939

Organic Background of Mind. F. Kennedy, New York.—p. 321.
Fractures of Hip: Plea for Internal Fixation. A. F. O'Donoghue, Sioux City, Iowa.—p. 329.
Present Day Trends in Anesthesia. S. D. Miller, Lincoln.—p. 334.
Pain Relief in Normal Labor and Operative Obstetrics. R. M. Grier, Evanston, Ill.—p. 338.
New and Effective Support for Joints. W. L. Sucha, Omaha.—p. 342.
Clinical Recognition and Treatment of Thyroid Deficiency States and Other Disorders of Hypometabolism. J. F. Gardiner, Omaha.—p. 345.
Rheumatic Fever in Nebraska. E. Thompson, Omaha.—p. 347.
Diseases of Chest from Point of View of Bronchoscopist. H. E. Kully, Omaha.—p. 350.

Philippine Islands Med. Association Journal, Manila

19: 395-466 (July) 1939

Inversio Uteri: Report of Eleven Cases. H. Acosta-Sison and N. D. Mendiola, Manila.—p. 395.
The Health of Our Citizen Army. V. Luna, Manila, and J. Salcedo Jr., Baguio.—p. 403.
Development of Parenchymatous Diseases of Liver. H. Kaunitz, Manila. —p. 415.
Biologic Assay (Rat Growth Method) of Syrup Preparation of Vitamin B_1. S. G. Jao, Manila.—p. 427.

Rocky Mountain Medical Journal, Denver

36: 605-684 (Sept.) 1939

Prolonged Labor. C. B. Ingraham, Denver.—p. 622.
What Should We Do to Improve Medical Facilities and Care? L. E. Viko, Salt Lake City.—p. 626.
Office Treatment of Common Rectal Disorders. V. G. Jeurink, Denver. —p. 629.
State Medicine, the Social Menace. L. E. Likes, Lamar, Colo.—p. 633.
Presentation of Bronze Tablet to the Medical School of the University of Colorado by the Denver Clinical and Pathological Society, in Memory of Dr. Henry Sewall. C. Powell, Denver.—p. 638.

Virginia Medical Monthly, Richmond

66: 513-574 (Sept.) 1939

Hospital Care for Indigent and Low Income Group: Plan for Subsidizing Accessories of Medicine. W. B. Martin, Norfolk.—p. 513.
Plan for Relieving the Burden of Medical Costs. J. Hundley Jr., Lynchburg.—p. 516.
Significance of Abdominal Pain in Children. T. D. Jones, Richmond.—p. 518.
*Report on Use of Sodium 5, 5-Diphenyl Hydantoinate in Fourteen Selected Cases of Epilepsy at the Virginia State Colony for Epileptics and Feebleminded. O. M. Weaver, D. L. Harrell Jr. and G. B. Arnold, Colony.—p. 522.
Aphthous Stomatitis Treated with Sulfanilamide: Report of Two Cases. J. L. Lane, Rocky Mount, N. C., and P. P. Vinson, Richmond.—p. 528.
Acute Encephalitis Without Apparent Cause. S. Newman and F. H. McGovern, Danville.—p. 529.
Addison's Disease with Failure of Cortical Extract Therapy: Case Report. H. G. Hadley, Washington, D. C.—p. 530.
Abdominal Pain Complicating Pregnancy. G. J. Levin, Norfolk.—p. 530.

Sodium Diphenyl Hydantoinate for Epilepsy.—Weaver and his associates used sodium 5, 5-diphenyl hydantoinate in the treatment of fourteen epileptic patients, who received the drug for periods of from two weeks to three months. Eight of the patients have been definitely benefited, six of them especially so. The results in the other six have proved so adverse that it was necessary to discontinue the treatment. Nine of the patients had a diminution in the number of their convulsions; two had a reduction in the severity of their convulsions. The general mental condition of six improved. There was a definite improvement in the postconvulsive state in three of the patients. A marked improvement in personality ensued in two. The numerous psychotic episodes disappeared in one patient who had had them. Two patients made gains in weight. One patient developed a rather unusual—certainly for her—state of well being. The two patients who were most improved were receiving phenobarbital in addition to the other drug. This suggests synergistic action. As to the unfavorable results, six patients were extremely drowsy for from two to six weeks after medication with the drug. Three suffered profound psychic distress. Three had an increase in the number of their seizures. Three complained of persistent and severe headache. A severe cutaneous reaction developed in five patients; in two of these this was complicated by edema of the face. These reactions disappeared on temporary withdrawal of the drug (though in two cases there was a later recurrence). One patient, who had been having only a few grand mal convulsions a month, began to have frequent and numerous petit mal convulsions. One patient who had never before been incontinent became so after receiving the drug for several weeks. One patient had an acute abdominal crisis that simulated acute appendicitis. One patient had a severe gastritis and diarrhea. Loss of appetite occurred in two. It is a powerful drug and appears to be more toxic and dangerous than phenobarbital. In their opinion the patient receiving the drug should be under the physician's constant observation. In the cases that were benefited the improvement was not solely a diminution in the frequency and a lessening in the severity of the seizures (that could quite probably have been brought about by massive doses of phenobarbital, bromides or chloral) but in several cases a rather remarkable improvement in the patient's personality, behavior and mental alertness occurred. The drug should be regarded as valuable for the treatment of convulsive disorders.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

Brain, London

62: 227-340 (Sept.) 1939

*Acute and Subacute Necrotic Myelitis. J. G. Greenfield and J. W. A. Turner.—p. 227.
Some Observations on Central Pain. D. Kendall.—p. 253.
Venous Drainage of Brain, with Special Reference to Galenic System. B. Schlesinger.—p. 274.
Neurologic Sequelae of "Kernicterus." G. M. Fitz Gerald, J. G. Greenfield and B. Kounine.—p. 292.
False Diverticulum of Lateral Ventricle Causing Hemiplegia in Chronic Internal Hydrocephalus. D. W. C. Northfield and Dorothy S. Russell.—p. 311.
Abnormal Cortical Potentials Associated with High Intracranial Pressure. D. Williams.—p. 321.

Acute and Subacute Necrotic Myelitis.—Greenfield and Turner report three cases of necrotic myelitis and assert that clinically the cases of necrotic myelitis fall into two distinct groups: the acute group, which they illustrate by one case, and a subacute group, represented by the original two cases. Acute necrotic myelitis shows itself by a rapid destruction of function of the spinal cord in the lumbar and sacral segments, with, at least in their case, a fairly rapid ascent of the signs to the lower dorsal segments. Owing to the rapidity of disturbance of function of the cord a flaccid paraplegia develops, and in none of the recorded cases has there been any sign of recovery from this. In the subacute type the disease is of gradual onset and slowly progressive course, usually without any remission, though in one case there was some recovery of power in the legs for from two to three months. The presenting symptom is usually weakness of the legs, though this may be preceded by severe pain in the distribution of the sacral segments or by dysesthesia in the lumbar and sacral areas. The differential diagnosis of acute necrotic myelitis presents considerable difficulty. While syphilitic transverse myelitis may be excluded by a negative Wassermann reaction, other types of acute myelitis, especially those due to the demyelinating diseases, are likely to cause confusion. The demonstration of a spinal subarachnoid block is the most valuable distinguishing feature between cases of spinal compression due to epidural abscess or Pott's disease and those of acute necrotic myelitis. In the differential diagnosis of subacute necrotic myelitis both amyotrophic lateral sclerosis and subacute combined degeneration may cause some difficulty in the early stages of the disease, but the development of sphincter disturbance and sensory changes will soon exclude the former, and the absence of dysesthesia in the hands and the normal blood count and gastric analysis the latter. Chronic meningovascular syphilis affecting the lumbosacral cord has to be excluded. The most difficult differential diagnosis is the differentiation from extramedullary or intramedullary tumors in the lumbosacral region of the cord. The two main differential points are the frequent occurrence of root pains and pain in the back in extramedullary tumors, and gradual ascent of the sensory level, which is usual in cases of subacute necrotic myelitis and rare in cases of tumor. The presence of subarachnoid block at lumbar puncture will settle the diagnosis, since tumors at this level are invariably associated with some degree of spinal block. Pathologically necrotic myelitis consists essentially of primary obliterative sclerosis of the small intramedullary and meningeal vessels in the lower segments of the spinal cord and is associated with great thickening of the walls of the larger meningeal veins and sometimes also of the larger arteries. The degeneration of the parenchyma of the spinal cord appears to be altogether secondary to the vascular lesion.

British Journal of Ophthalmology, London

23: 585-648 (Sept.) 1939

Parenchymatous Syphilitic Keratitis and Syphilitic Atrophy of Optic Nerve Treated with Sulfosin. V. Larsen.—p. 585.
Unusual Condition of Posterior Surface of Cornea (Posterior Herpes of Cornea). L. Staz.—p. 622.
Studies on Bacteriology of Hypopyon Ulcer: III. Bacteriologic Investigation of 120 Cases of Hypopyon Ulcer. A. J. Rhodes.—p. 627.
Infantile Dacryocystitis Treated by Surgical Diathermy. A. M. MacGillivray.—p. 630.
Rotating Cross Cylinder. M. Tree.—p. 632.

British Medical Journal, London

2: 593-630 (Sept. 16) 1939

Hydatid Disease: Errors in Teaching and Practice. L. Barnett.—p. 593.
Nonopaque Ureteric Calculi. J. C. Ross.—p. 599.
Etiology and Treatment of Spasmodic Flatfoot. A. H. Todd.—p. 602.
Treatment of Leg Fracture Casualties in Central China War Zone. W. G. Brown.—p. 604.

Irish Journal of Medical Science, Dublin

No. **165:** 645-716 (Sept.) 1939. Partial Index

Congenital Heart Disease in General Practice. P. T. O'Farrell.—p. 645.
Hematology in General Practice. D. Mitchell.—p. 664.
Some Obstetric Hemorrhages. R. M. Corbet.—p. 669.
Prevention and Treatment of Fevers. C. J. McSweeney.—p. 673.
Some Aspects of Medical Jurisprudence in Relation to Practice. D. A. MacErlean.—p. 684.
Treatment of Fluid in Thoracic Cavity. E. T. Freeman.—p. 691.
Clinicopathologic Demonstration: Pathology of Heart Failure. W. Boxwell.—p. 698.
Deep X-Ray Therapy in Prostatic Enlargement. R. A. Stoney.—p. 704.

Journal of Hygiene, London

39: 471-596 (Sept.) 1939. Partial Index

Some Observations on Reversed Anaphylaxis. M. van den Ende.—p. 471.
*Subjective Impressions of Freshness in Relation to Environmental Conditions. T. Bedford and C. G. Warner.—p. 498.
Effects of Morphine, Diacetylmorphine and Some Related Alkaloids on Alimentary Tract: Part III. Cecum and Colon. G. N. Myers.—p. 512.
Some Observations on Classification of Enterococci. N. C. Graham and Eileen O. Bartley.—p. 538.
*Weil-Felix Reaction in Trachoma. R. Kirk, A. R. McKelvie and A. D. Drysdale.—p. 553.
Further Observations on Relation of Decline in Number of Horse-Drawn Vehicles to Fall in Summer Diarrhea Death Rate. G. S. Graham-Smith.—p. 558.
Sulfanilamide Treatment of Scarlet Fever. Jane O. French.—p. 581.

Freshness in Relation to Environment.—According to Bedford and Warner the requirements for a pleasant and invigorating environment can be stated: 1. A room should be as cool as is compatible with comfort, since freshness tends to increase as the temperature is reduced. 2. There should be adequate air movement. During the winter season the air velocity in the ordinary factory averages about 30 feet per minute and in the majority of cases lies between 20 and 40 feet per minute. At velocities much below 20 feet per minute feelings of stuffiness are likely to arise. In summer weather or in hot factories velocities rather higher than those mentioned are desirable. 3. The air movement should be variable rather than uniform and monotonous. The body is stimulated by ceaseless change in the environment. Outdoors one is braced by the changing play of the wind, and likewise the variations of air movement which may be encountered indoors exert an invigorating effect. When ventilation is obtained through open windows the air movement is likely to be variable, but with some mechanical ventilating systems the air movement is undesirably monotonous. In mechanical installations the air inlets should be so designed and the velocity of discharge so arranged that suitable eddying currents are set up. 4. The relative humidity of the air should be kept reasonably low. It should not exceed 70 per cent and should preferably be much below that value. 5. The average temperature of the walls and other solid surroundings should not be appreciably lower than that of the air and should rather be warmer. The combination of cold walls and warm air often causes a feeling of stuffiness. 6. The air at head level should not be distinctly warmer than that near the floor, and the heads of the occupants should not be exposed to excessive radiant heat. 7. The air should be free from objectionable odors.

Weil-Felix Reaction in Trachoma.—Various workers in different countries claim that in serums from patients with trachoma a positive Weil-Felix reaction is found and regard this as evidence that the causal agent of trachoma is a Rickettsia. Kirk and his colleagues therefore examined 200 serums from Sudanese patients with trachoma and state that the study failed to reveal any significant differences with regard to the Weil-Felix reaction between them and twenty-two serums from non-trachomatous controls or 1,000 serums taken, without reference to trachoma, from a large and representative section of the population. Clinical and serologic evidence suggests that typhus is absent from the Sudan. For this reason the interpretation of results is less liable to confusion in the Sudan than in countries in which positive Weil-Felix reactions may occur in a varying proportion of the population, owing to typhus infections.

Annales de Dermatologie et de Syphiligraphie, Paris

10: 641-736 (Aug.) 1939

Diabetes Insipidus in Course of Sarcoid of Boeck. M. Jersild.—p. 741.
Tuberous Sclerosis of Bourneville and Symmetrical Fibromatous Nevi of the Face. J. Watrin, P. Meignant and R. Weille.—p. 644.
*Dermatitis of "Laundresses": Role of Chromium and Chlorine (in France). H. Rabeau and Mlle. Ukrainczyk.—p. 656.
Specific Syphilitic Balanitis. J. Follmann.—p. 681.
Peculiar Form of Leukonychia: Leukonychia in Wide Longitudinal Band. J. Ferreira Marques.—p. 688.

Dermatitis of Laundresses.—In a review of the literature on the "dermatitis of laundresses" Rabeau and Ukrainczyk show that especial attention has been directed to the important part played by alkaline substances in the pathogenesis of occupational dermatitides. Alkaline substances produce an alteration of the epidermis which in turn predisposes to sensitization. Thus soaps have not only an irritating but also probably an eczematogenic action. As a result of their dissolving effect on the fats of the skin, the alkaline substances prepare the way for sensitization. Experiments demonstrated that there are persons who are sensitive to alkaline substances and who lack the capacity to neutralize them when they are applied to their skin. This deficiency has been found in 8 per cent of normal subjects and in 90 per cent of patients with eczema. Some investigators believe that sodium hypochlorite can elicit allergic conditions and the authors determined that there is another important factor of sensitization, namely chromium compounds. In studies on the frequency of sensitivity for Javelle water, which is used widely in France for purposes of cleaning and disinfecting in households and for bleaching in various industries, the authors used cutaneous tests as well as a palpebral test. They found the palpebral test especially helpful in that it revealed sensitizations not detectable by the usual methods. The patient closes his eyes and a specimen of the substance to be tested is applied to one of the eyelids. The reaction is read after twenty-four hours. The authors describe studies on the eczematogenic power of the different substances used in laundering on patients sensitized to Javelle water and to bichromates. These studies demonstrated the absolute parallelism of these sensibilizations and the eczematogenic action. In studies and observations on different types of Javelle water it was observed that the sensitization apparently depends on the presence of bichromates. The authors gained the impression that the intolerance for chromium precedes that for chlorine. They were able to collect 200 patients presenting this double intolerance to chlorine and chromium. The following occupations were represented: housekeepers, employees of hotels and restaurants, laundresses, cement workers, mechanics, pharmacists and physicians; moreover, there were patients in whom the sensitization could be traced to cosmetics such as powders containing lead bichromate. It was found that solution of chlorinated soda and black soap are not tolerated by the patients with double sensitization. The authors think that this is due to the fact that solution of chlorinated soda is often wrongly prepared from Javelle water and a little Javelle water is occasionally added to black soap. They rarely observed chemical intolerance to substances other than bichromates and hypochlorites. They stress the social importance of the dermatitis produced by Javelle water, pointing out that they occur in different occupations and that they may be of long duration.

Journal de Médecine de Lyon, Lyons

20: 475-502 (Aug. 20) 1939

*Amebiasis and Cancer of Large Intestine. A. Cade and M. Milhaud.—p. 475.
Cancer of Stomach in Young Subjects. L. Bouchut, M. Levrat and J. Philippe.—p. 481.
Angina Pectoris of Digestive Origin. C. R. Bocca.—p. 487.

Amebiasis and Cancer of Large Intestine.—Cade and Milhaud demonstrate that from the diagnostic point of view the relations between cancer of the large intestine and amebiasis present three different aspects: (1) cancer can simulate amebic dysentery, (2) chronic amebiasis can assume a pseudocancerous form and (3) cancer and amebiasis may coexist. As regards the concurrence of amebiasis and cancer, the authors consider two possibilities: either cancer may appear sooner or later after amebic infestation or, in a patient with neoplasm, examination of the feces may reveal the pathogenic amebas of dysentery. The authors describe two cases of association of amebiasis and cancer which illustrate these two eventualities. In one case the neoplasm was localized on the transverse colon, in the other case in the rectosigmoid. The authors show that an exact diagnosis is of great importance, since if cancer is present extensive and early excision is necessary. A reliable diagnosis will be derived from the results of rectal palpation, of roentgenologic examination and of rectosigmoidoscopy, complemented if possible by biopsy. Digital examination of the rectum permits the detection of indurated, irregular and perhaps painful masses. The hardness is generally greater in cancer than in amebiasis, as is also the adherence to the base and the tendency to bleeding. Nevertheless the tactile examination may be confusing, especially if the tumor is located high up. It is advisable to complement it by rectosigmoidoscopy. The latter procedure is indispensable if digital examination of the rectum is negative. If after rectoscopy there is still uncertainty, biopsy should be done. Roentgenoscopy is valuable particularly in cancers situated high up, which escape digital examination and even rectosigmoidoscopy. Trial treatment with emetine and arsenical substances may also furnish valuable information.

Presse Médicale, Paris

47: 1309-1324 (Sept. 2) 1939

*Medical Treatment in Suppurative Nontuberculous Pleuritis. P. Lévy-Valensi, S. de Sèze and J. Pinès.—p. 1309.
Gas Masks and Correction of Ametropias. Cot, Moynier, Genaud and Robert.—p. 1311.

Suppurative Nontuberculous Pleuritis.—Lévy-Valensi and his associates treated five patients between 29 and 59 years of age who had high fever in consequence of streptococcic pleuritis, evidenced on puncture. Peroral dosage with carboxylsulfamidochrysoidin varied from eight tabloids of 0.2 Gm. each administered daily to twelve (2.4 Gm.). Treatments lasted from seventeen days to six weeks with progressive determinations of increasing sterility. In two cases pachypleuritis was roentgenologically established at the time of discharge from the hospital. In their discussion of sulfonamide derivatives used in antibacterial chemotherapy the authors favor those belonging to the azo coloration group over the white because of their freedom from toxicity and accidents, especially in streptococcic pleuritis. The authors recommend early treatment with sufficiently high dosage from the beginning, according to the drug employed. Daily treatment should be continued until successive punctures show complete asepsis of the interpleural fluid and a negative culture response. They do not favor simultaneous peroral, intramuscular and intrapleural dosing with sulfonamide derivatives or serous and vaccinal therapy but recommend cardiac tonics and cardiovascular analeptics and systematically continued puncture tests. For precautionary purposes they advise that the patient be kept in bed for from eight to ten days after suspension of treatment, with resumption of dosing at one third strength for another week. Repeated clinical and x-ray examinations may indicate residual pachypleuritis. To overcome this an open air convalescence and breathing exercises methodically pursued are indicated.

Schweizerische medizinische Wochenschrift, Basel

69: 781-804 (Sept. 2) 1939. Partial Index

Use of Sulfapyridine in Internal Medicine. F. Sciclounoff and R. Junet.—p. 781.
Treatment of Pneumonias with Pyridine Sulfanilamide. F. Buser.—p. 785.
*Effect of Rectally Administered Insulin Suppositories in Diabetic Patients. F. Wuhrmann.—p. 787.
Use of Milk from Collecting Depots for Human Milk for Feeding of Nurslings. P. Feldweg.—p. 789.

Insulin Suppositories for Diabetic Patients.—Wuhrmann directs attention to experiments with the rectal administration of insulin suppositories which Brahn and Langner reported in the *Nederlandsch Tijdschrift voor Geneeskunde* **83:**3784 (July 29) 1939, abstracted in THE JOURNAL October 14, page 1525. In view of the possible practical significance of this rectal administration of insulin, Wuhrmann decided to try it in cases of diabetes. He studied the blood sugar curves of fourteen diabetic patients and of four persons without metabolic disorders, following the rectal administration of insulin suppositories. The rectal administration of the insulin suppositories was combined with a sugar tolerance test, and the

blood sugar values were determined before and for a certain period after. More than fifty blood sugar curves of diabetic patients were studied and eleven of the persons who were free from metabolic disorders. Since the rectal administration of glandular preparations requires much larger doses than does the subcutaneous injection, the author designated 10 injection units as 1 suppository unit. Thus, a 20 unit insulin suppository contains 200 injection units. Since larger doses are required, the author thinks that less refined forms of insulin can be employed for rectal application, in that for instance the presence of protein substances does not constitute a hindrance in this form of administration. He reproduces only a few of the blood sugar curves which he obtained in the course of his studies. He reaches the conclusion that measurable and effective quantities of insulin can be introduced by means of rectal suppositories. However, he thinks that the extensive use of insulin suppositories in the practical therapy of diabetes mellitus will require further clinical investigation.

Archiv für Gewerbepathologie, Berlin

9: 407-508 (July 12) 1939. Partial Index

Fatal Subacute Industrial Lead Poisoning. W. Ehrhardt.—p. 407.
Demonstration in Pulmonary Tissue of Dust Containing Silicic Acid by Means of Fluorescence Microscopy. Margarete Oberdalhoff.—p. 435.
*Occurrence of Occupational Manganese Intoxication in Steel Industry. H. Voss.—p. 453.
Progressive Bulbar Paralysis and Amyotrophic Lateral Sclerosis After Chronic Manganese Poisoning. H. Voss.—p. 464.
Ocher Dust Lung. H. Otto.—p. 487.
Examination of Lung with Chromium Silicosis. E. Letterer.—p. 496.

Occupational Manganese Intoxication in Steel Industry.—Reviewing the cases of manganese poisoning that have been reported in the literature, Voss demonstrates that, in comparison to the wide technical use of manganese and its compounds, the number of occupational manganese intoxications is small. As explanations for this the author suggests that apparently only a small number of persons have the predisposition for manganese poisoning, that not all manganese compounds are capable of exerting a toxic action in the organism, and that danger of occupational poisoning exists only where manganese or manganese compounds are inhaled or swallowed in adequate quantities and for a comparatively long period. Small quantities of manganese, such as are used in the ceramic industry in the preparation of lacquer and in the dye and glass industries, apparently are not sufficient to elicit chronic manganese intoxication. Impairments of the central nervous system by manganese have hitherto been observed in persons engaged in the mining of manganese ores, in the sorting and handling of ores containing manganese, in the processing of pyrolusite (manganese dioxide) and in those who come in contact with manganese vapors or who work with metallic manganese. In the steel industry manganese intoxications may be produced not only by manganese vapors but also by the dust of ferromanganese. The author reports the clinical history of a man, aged 33, who for ten months had worked part of the time and for seventeen months all of the time in a deficiently ventilated room, tending a number of ferromanganese grinders. For more than two years the man felt well, but after that the typical symptoms of manganism developed: masklike face, amyostatic symptoms, disturbances in speech and walk, micrographia, compulsory weeping and laughing, stuttering, and disturbances in the potentia coeundi. Moreover, there were mild polyglobulism and monocytosis. The increased manganese content of the feces, which was still manifest more than eight months after the man had ceased working with manganese, indicates that the patient's organism had stored manganese. That other men who worked under the same conditions did not develop manganism does not contradict the causal significance of manganese in the reported case because an individual predisposition seems to play a part. Since nervous lesions caused by manganese frequently remain constant or gradually increase, it is somewhat surprising that considerable improvement resulted in the reported case. However, other cases have been reported in which cessation of contact with manganese, on appearance of the first symptoms, was followed by great improvement or complete cure. The author points out that this case cannot be cited as proof of the toxicity of metallic manganese, because some oxidation takes place in the course of grinding and it is possible that products of oxidation exert the toxic action.

Klinische Wochenschrift, Berlin

18: 1045-1076 (Aug. 5) 1939. Partial Index

Elimination of Coproporphyrin in Spontaneous Urine of Human Subjects Under Influence of Irradiation. B. G. Hager.—p. 1045.
Carbon Monoxide and Hypertension. M. Staemmler and G. W. Parade. —p. 1049.
Synthesis of Hippuric Acid During Normal Pregnancy and During Puerperium. W. Neuweiler.—p. 1050.
Clinical Aspects of Addison's Disease. F. Heni.—p. 1052.
Vitamin C Content of Blood and Question of Vitamin C Deficiency. W. von Drigalski.—p. 1056.
*Disturbance in Coagulation of Blood in Jaundice Due to Obstruction and Its Treatment by Vitamin K. F. Koller and F. Wuhrmann.—p. 1058.
Substitution for Condensing Action of Gallbladder in Case of Exclusion of Gallbladder. M. Künsztler.—p. 1067.

Vitamin K and Coagulation of Blood in Jaundice.—Koller and Wuhrmann show that the hemorrhagic tendency in obstructive jaundice, which is greatly feared by surgeons, has found an explanation in recent years. The favorable therapeutic effect of vitamin K in jaundice corroborates the assumption that a K avitaminosis exists. This is not surprising when it is considered that vitamin K is fat soluble and that fat resorption is impaired in obstructive jaundice. After reviewing the clinical history of one case in which vitamin K exerted a specific effect, the authors say that they were able to demonstrate the prompt action of vitamin K on the coagulation time and on the hemorrhagic diathesis in nine cases of obstructive jaundice (five cases of cholelithiasis and four cases of carcinoma of the pancreas or choledochus). They also state that analogous observations were reported by Danish and American authors. In hepatocellular icterus, especially cirrhosis of the liver, vitamin K seems to exert no effect, which suggests that the regenerating action of vitamin K on prothrombin presupposes a more or less intact function of the hepatic cells. However, the retardation in the coagulation which is observed in nontropical sprue can be promptly counteracted by vitamin K. In this connection the authors direct attention to the fact that Fanconi ascertained in 1928 that in infantile sprue (intestinal infantilism) there occurs a form of hemorrhagic diathesis in which C avitaminosis does not appear but in which a hypothrombinemia exists. The K avitaminosis in nontropical sprue is understandable when it is considered that a disturbance in resorption is an essential factor in this disease.

Vrachebnoe Delo, Kharkov

21: 371-450 (No. 6) 1939. Partial Index

*Symptomatology and Therapy of Brucellosis. A. A. Tarpi.—p. 375.
Treatment of Ulcer Patients with Provitamin A—Carotene. M. S. Levinson and V. M. Kushko.—p. 381.
Autohemotherapy in Ulcer Disease. O. E. Amchislavskaya.—p. 385.
Effectiveness of Linzer's Method of Treating Syphilis. D. A. Bykhovskaya.—p. 389.
Intramuscular Ichthammol Injections in Inflammation of Female Genitalia. K. P. Levitskaya.—p. 393.
Hypnosis Therapy of Pruritus Cutaneus. N. G. Bezyuk.—p. 397.

Brucellosis.—Tarpi's observations on sixty patients treated at the Tropical Institute of Stalinbad (Tadjisk Republic) between 1932 and 1936 revealed that forty-six presented a gradual onset, fourteen an acute onset, and that the undulant type of fever was observed in only eighteen cases. Among the characteristic symptoms were noted persistent fever, painful sensation in the bones and joints of arthralgic rather than of arthritic type, and the appearance of painful subcuticular nodes located, as a rule, on the upper third of the arm and on the digital phalanges. These persisted for from fifteen to thirty days. Pustular, papular and roseolar rashes were observed during the various stages of the disease. In 85 per cent of the cases there were profuse sweats. The spleen was enlarged in 41 per cent, the liver in 53 per cent and there was an orchitis in 18 per cent. A mild degree of hypochromic anemia with leukopenia (from 4,000 to 5,000) and lymphocytosis was the rule. In the cases in which a positive blood culture was obtained, Brucella melitensis was the organism found. The author was not able to differentiate, on the basis of clinical signs, maltese fever from Bang's disease. Diagnosis is best made by the blood culture method. It takes from twelve to twenty-one days to grow the organism. The allergic brucellin test was positive in all of his cases as well as in a number of the laboratory workers who had contact with laboratory animals. The coexistence of malaria had an aggravating effect on the course of brucellosis. The average duration of the disease was six months. There were no fatalities in this series. Methenamine, calcium, acri-

flavine hydrochloride, collargol, arsphenamine and ethoxy-diamino-acridine lactate did not prove to be of much therapeutic value. Autohemotherapy was without effect, whereas citrated blood transfusions were effective in the beginning of the disease. Vaccine prepared from avirulent strains of Brucella suis and given intravenously in increasing doses proved to be the most effective therapy in the series.

Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

83: 3981-4088 (Aug. 12) 1939. Partial Index

Treatment of Pemphigus in Aged Persons by Means of Germanin. E. Zurhelle.—p. 3982.
Case of Diffuse Sclerosis and Its Heredity. G. P. Frets.—p. 3987.
Treatment of Schizophrenia with Insulin and Metrazol. G. W. Kastein. p. 3994.
*Considerations on Removal of Corpus Luteum Verum During Early Pregnancy and Progesterone Content of This Organ and of Mature Placenta. J. J. Duyvené de Wit and V. M. Oppers.—p. 4001.
Further Investigations on Formation and Therapy of Renal and Vesical Calculi. A. Polak.—p. 4009.
Vitamin C in Therapy. M. van Eekelen.—p. 4015.

Removal of Corpus Luteum During Early Pregnancy.—Duyvené de Wit and Oppers report a case in which the corpus luteum of pregnancy was removed on the eighty-third day after the last menstruation. From this time until the sixth month of pregnancy progesterone was administered. Unimpaired by occasional uterine contractions, the pregnancy took a normal course. The authors further cite reports from the literature, comprising 131 cases, in which the corpus luteum was removed during the first four months of pregnancy. A review of these cases discloses that in the absence of substitutional therapy abortion results in 23.7 per cent of the cases. With regard to the treatment, the authors take the following position: In ovariectomies during pregnancy, progesterone should be given prophylactically and for some weeks after the operation. If there are no threatening symptoms and a careful supervision is possible, an expectant attitude can be taken, because in three out of four cases the pregnancy will remain intact and take a normal course without substitutional therapy. A clear understanding of the progesterone exchange can be obtained only if it is determined how much progesterone exists at a certain time in the organs preparing it, in the blood, in the organs consuming it and in the products of excretion. In the case reported by the authors, Duyvené de Wit's bitterling test was employed for the determination of the progesterone content. The corpus luteum of pregnancy which was removed from the woman weighed 1.3 Gm. and it was found to contain 33 micrograms of progesterone per gram of tissue. This is about twice as much as is found in a mature menstrual corpus luteum. The placenta, which weighed 480 Gm., contained 640 micrograms of progesterone.

Acta Radiologica, Stockholm

20: 325-414 (Aug. 21) 1939

Method for Determination of Heart Size by Teleroentgenography (Heart Volume Index). S. Jonsell.—p. 325.
Roentgenologic Observations in Renal Tuberculosis. A. Renander.—p. 341.
*Roentgen Therapy in Nonspecific Chronic Arthritis. S. N. Bakke.—p. 357.
Pneumatosis Cystoides Ventriculi et Jejuni. R. Baumann-Schenker.—p. 365.
Radiologic Treatment of Cancer of the Rectum. Elis Berven.—p. 373.
Easily Made "Safety Device" for Roentgenologic Apparatus. S. R. Kjellberg.—p. 391.
Gastroscopic and Roentgenologic Observations in Membranous Gastritis. K. Lundbæk.—p. 394.
Roentgen Diagnosis of Pneumatosis Cystoides Intestinorum Hominis. S. Berglund.—p. 401.
Diaphragm Construction as Contribution to Screening-Off Technic in Teleroentgen Therapy. O. Sandström.—p. 406.

Roentgen Therapy in Nonspecific Chronic Arthritis.—Bakke rapidly reviews various theories proposed to account for the beneficial effect of roentgen rays on nonspecific chronic arthritis and reports the results that he obtained in a serial roentgenographic examination of 555 persons. He regards primary calcareous deposits in the soft tissues surrounding the joints (chiefly shoulder, knee, loins and hip) as "catch basins" for infective matter released into the blood stream by lesions elsewhere, thus conditioning inflammation and pain, and attributes the beneficial effect of roentgen rays to their action on the inflammation set up in the capsular ligaments of the joints. The author was able to verify his theory of the significance of primary lime deposits by roentgenologically testing the soft tissues of the shoulders of 200 persons ranging in age from 20 to 69 years who had never previously complained of pain in that part of their body and by discovering that twenty-six of these (13 per cent) showed larger or smaller calcium accumulations (three bilaterally). Of these twenty-six, the age group from 20 to 29 was represented by five cases. The 555 patients with nonspecific chronic arthritis roentgenographically examined included 230 male and 325 female subjects, the age level ranging from 20 to 89, with the greatest incidence in the ages between 30 and 70. Tests made were followed up with oral or written inquiries. Subsequently 523 were reexamined and divided into four groups with the following results: no change 11.9 per cent, improved 15.3 per cent, greatly improved 34.6 per cent and cured 38.4 per cent, irradiation thus benefiting 88.3 per cent in some way. The total number of actual cures, represented by 38.4 per cent, amounted to 213 cases (age level 40 to 49, sixty-two cures; age level 50 to 59, sixty-eight). Grouped according to the chief seat of the arthritic or periarthritic ailment, there were 170 shoulder cases with 103 cures, 148 knee cases with fifty-seven cures, 103 loin cases with twenty-seven cures and eighty-three hip cases with fifteen cures. The dose, adjusted to the nonresident character of the majority of the patients, was administered daily or at most every other day, the regular dose amounting to 100 roentgens per field. Every joint received serially four or six such doses, the series varying from one to four or five and in stubborn cases to eight, at intervals of from four to eight weeks While the knee received 100 roentgens in the course of from four to seven days, the shoulders, loins and hips received 150 six times, the hand 100 four times and so on. The author's unit skin dose was about 750 roentgens. The analysis of failures indicated that unimproved patients received on an average 1.38 treatments compared with 2.14 for the others and seems to suggest the caution not to discontinue treatments prematurely.

Ugeskrift for Læger, Copenhagen

101: 889-914 (Aug. 3) 1939

Oxygen Therapy in Theory and Practice. C. Sonne.—p. 889.
*Avitaminosis K in Infants as Cause of Hemorrhagic Diathesis. H. Dam, E. Tage-Hansen and P. Plum.—p. 896.
Shock after Painting of Throat. O. Dige-Petersen.—p. 904.

Avitaminosis K in Infants and Hemorrhagic Diathesis.—Dam and his associates say that in normal children an avitaminosis K, usually moderate, develops in the first days after birth and usually disappears after a week. This avitaminosis K causes a hypoprothrombinemia which must be regarded as the cause of the common slight hemorrhagic diathesis in the newborn. Whether or not jaundice is present seems to be without significance. The avitaminosis is assumed to be due to a deficient supply of vitamin K through the intestine. In some cases of icterus gravis of the newborn, anemia of the newborn and congenital dropsy, considerable hypoprothrombinemia was established. Since the administration of vitamin K in two of their cases was followed by a rapid rise in prothrombin, the authors conclude that there was an avitaminosis K in these cases. A complete lack of prothrombin established as early as twenty-four hours after birth is ascribed to reasons other than deficient resorption from the intestine.

101: 915-946 (Aug. 10) 1939

Content of Carotenoids and Vitamin A in Mother's Milk with Special Regard to Its Dependence on Diet. T. K. With and C. Friderichsen.—p. 915.
Water and Salt Metabolism from Practical Surgical Viewpoint. V. Aalkjær.—p. 925.
Defective Nutrition in Denmark and Its Significance in Therapy. Johanne Christiansen.—p. 929.
Roentgen Examination of Appendix. V. Jensen.—p. 932.
*Investigations on Effect of Insulin on Gastric Secretion. P. Horstmann.—p. 935.
Encephalitis after Vaccination. A. Eldahl.—p. 938.
Death from Serum Sickness after Treatment with Pneumococcus Serum. P. Borch Madsen.—p. 940.

Effect of Insulin on Gastric Secretion.—Horstmann found on examination of ten schizophrenic patients that in insulin coma a considerable rise in the acidity of the gastric secretion occurs after an initial fall. The rise begins after the blood sugar has reached its low phase. The acidity decreases after oral administration of cane sugar solution or dextrose solution and also immediately after dextrose intravenously in doses which terminate the effect of insulin.